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NEWS IN BRIEF

Benn for Poly conference

THE social effects of information technology will be the theme of a conference at the South Bank Polytechnic next week, at which Energy Minister Tony Benn will be the keynote speaker.

The Polytechnic is making available facilities for the use of working groups that might develop from the conference to study some activities in more detail. Further information from Sean McConnell at the Department of Town Planning, the Polytechnic of the South Bank, Wandsworth Road, London SW8 2JZ. Tel: 01-923 8989.

US may sue IBM

IBM could be taken to court in the spring by the US government for allegedly making "excessive" profits on leasing computer equipment to government agencies in 1969 and 1970. The charges have been made by the US government's Renegotiation Board, and IBM has said that it will contest the board's findings and will take the matter to the Federal Court of Claims if necessary.

Futurodata talks

ICROMPROCESSOR development systems builder Futuredata Computer Corp of Los Angeles looks like being acquired by GenRad, the test equipment manufacturer. GenRad has agreed in principle to buy Futuredata, which makes the Zilog Z80-based Microsystem family. Microsystems can also support Motorola 6800 and Intel 8080 processors (CW, December 8, 1977).

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Health and Safety mini network revised

FOLLOWING a pilot computer scheme carried out at the East Anglia office of the Health and Safety Executive, which administers the inspection of potentially hazardous industrial sites, the Central Computer Agency is revising its specifications for an HSE minicomputer network.

The original proposal included the installation of a number of minis via which information gained by HSE factory inspectors would be fed into a central computer for analysis.

This would allow cross-references and other comparisons to be made easily and would make it possible to detect when special visits should be made to a factory on the basis of health and safety reports from inspectors.

However, the pilot scheme showed that some improvement was required.

"No tenders for equipment have yet been made," said a CCA spokesman, "but the expected start-up date is still January 1981."

Commenting on the prospect of using the system, an HSE spokesman said, "When it is operational, the network will enable us to provide a national and internal source of statistics. Meanwhile, the HSE is also attempting to provide more and more of its guidance material to employers in the form of Prestel 'pages'."

The HSE believes that it is an "essential tool with which we are breaking new ground. It will make it much easier for employers to comply with the Health and Safety Act."

CDC evacuates staff from Iran

THE future of Control Data's joint venture to manufacture Plato computer terminals in Iran (CW, November 9), is uncertain following the protracted political turmoil there. All the 30 or so non-Iranian employees of the company, mainly working on sales and leasing, have been evacuated, but six are to return once the climate improves.

Computer Terminals of Iran, which is 30% owned by CDC, is staffed by Iranians.

Honeywell's employees working with Isiran, the company which markets Series 60 computers in Iran, have opted to stay, and the company's controls office in Teheran is reported to be still in business. It is staffed by Europeans and Iranians.

Univac's employees have remained in Iran, but the company has shelved plans to build the V77 minicomputer there (CW, July 13, 1978).

Electronic Data Systems of Dallas has cancelled a contract with the Iranian Ministry of Health and Social Welfare for computer services.

The contract, which was due to run from October 1978 to November 1979, was worth up to \$20.5 million, but was terminated when arrears on payments from the Ministry reached \$5 million. The company hopes to resume work if it can get clarification on the Ministry's intentions, and payment of monies due.

Independent Dutch viewdata service

A MAJOR Dutch publishing house is to launch its own viewdata service alongside the one offered by the Dutch PTT. But the publishing house, VNU, has developed its plans in close co-operation with the PTT, and the two systems may be linked to give users access to information stored on both.

The system will be set up and run in conjunction with two UK companies, Inspec and Applied Viewdata Systems, and based on a British GEC 4080 computer, as is the UK Post Office's viewdata service, Prestel.

To handle all aspects of its interest in viewdata, VNU has set up a subsidiary, Toegepaste Viewdata Systems, as part of an existing subsidiary, Intermedi-

air, which represents the US government's National Technical Information Service in Holland and circulates a weekly publication to 20,000 graduates.

TVS is therefore well placed to offer Carerdata in the Dutch speaking countries, which it will do under an agreement with Applied Viewdata Systems of London, which developed it for use on Prestel.

Further activities by TVS in viewdata will include providing closed user groups, one of which will be the parent company itself, VNU, which comprises publishing companies all over Holland. TVS also offers consultancy in how to use viewdata, and will organise applications seminars and publish a newsletter.

The system will be installed in the group's headquarters at Haarlem, near Amsterdam, in March and will support 32 ports initially, expanding to 200 or more as the need develops.

Essay competition

IN a competition aimed at encouraging potential authors from the industrial educational, commercial and public sectors, the Institute of Data Processing Management and Langton Information Systems have organised an essay competition on "The Practical Implications of Distributing Computer Power."

The essays, to be of between 2,000 and 3,000 words, may cover all areas and aspects plus the problems of the subject. A first prize of £300 and additional cash awards will be given, and entries, which must be delivered to the judging panel by Monday, April 30, will be evaluated on their originality, enterprise and practicality.

Judges are Alan Benjamin of the Computing Services Association; Reg Boot, National Computing Centre; Geoff Dale, the Post Office; John McNulty, Modular Technology; Ted Schoeters, the Financial Times; and Alan Wood, IDPM.

Winning entries will be published in Computer Weekly, and Input Two-Nine, which publishes the Current Aspects of Computer Technology series, will produce a special edition featuring the best entries.

Further information and entry forms can be obtained from: IDPM/Langton Award, Institute of Data Processing Management, 12-13 Henrietta Street, London, WC2 8NU.

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Head of GEC Fairchild

THE man picked to head the GEC-Fairchild semiconductor venture in the UK is David Marriott, who is giving up his post as a Fairchild vice-president to take up the position.

Marriott, 44, a native of Northampton, went to the US in 1962 and joined Fairchild in 1965. He has served as general manager of European operations and as manager of the diode plant at San Rafael, California. He became a vice-president in 1974.

He was elected managing director of GEC-Fairchild at the company's first board meeting last month, but the names of the other board members have not yet been released.

● Fairchild is to pay \$27 million for Martin Marietta's 20% stake in US terminal manufacturing Bunker Ramo, as a step towards full acquisition. Bunker Ramo terminals are marketed in the UK by GEC's major competitor, Plessey.

The first afternoon will consist of five workshops running concurrently, covering the DPC report itself, computers, privacy and cost; employment records and references; medical and social work records; and police records.

The second day will cover the international situation, and will end with a panel discussion involving, among others, two members of the DPC, Paul Sieghart and Charles Read.

The conference is being sponsored by the National Council for Civil Liberties, the NCC, and the IDPM.

To register, contact the NCC on 01-278 4575.

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Chance to debate privacy proposals

THE first public discussion of the Data Protection Committee's final proposals will take place at the conference on privacy at the Rembrandt Hotel, Knightsbridge, on January 24 and 25.

The Home Secretary, Merlyn Rees, and Liberal leader David Steel will address the conference, along with many of the leading figures in the field in the UK and abroad.

Sir Norman Lindop, chairman of the DPC, will chair the first morning of the conference, and among the other speakers will be Christopher Layton from the EEC, Kerstin Amer from Sweden, Harrie Sherman of the union ASTMS, and Professor Alan Westin of Columbia University, New York.

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Briefing Super power systems

DETAILS of two new super-computers, more powerful than anything hitherto produced, appeared this week.

Control Data will announce the Cyber 203, derived from the 100 million instruction per second Star 100, next week, while Gouldays is to build the world's most powerful parallel processor. The latter machine, called a Massively Parallel Processor, MPP, is being built to process data from satellites for NASA and will have 16,384 processing elements and be rated at 6000 mips.

TUC strategy

THE Prime Minister, and TUC General Secretary Len Murray are among the speakers at the TUC Industrial Strategy Conference for Electronics, to be held next week (over 450 union delegates have been invited to the conference, which will aim to promote the industrial strategy).

Seven paid off

SIXTEEN contract analysts and programmers at Mullard, Southampton, have been given 28 days' notice following termination of in-house projects on 1500 minis as a prelude to transfer of the work to newer Philips hardware. The seven want compensation for early ending of their three to 12 month contracts but Philips says its action is within the contract terms.

IBM sales boom

OUTRIGHT sales at IBM reached unprecedented levels in the fourth quarter of 1978, bringing the company record turnover and profit figures. Net profit rose 14.5% to \$3,111 million on turnover up 16% at \$4,076 million. Fourth quarter profits stormed through the billion dollar barrier for the first time, up 27% at \$1,015 million on turnover also up 27%.

£1m investment

AN investment of £1 million, plus £250,000 from the Scottish Development Authority, is to be made by Honeywell Control Systems in its Newhouse, Scotland, facility. The money will be used to establish a new production line to make process control systems, including the TDC 2000 range, and a new microprocessor-based system known as DCP7700. Full story, page 11.

Maths inquiry

THE Committee of Inquiry into the Teaching of Mathematics in Schools has called for evidence from anyone interested in the subject. It is particularly concerned about the basic computational skills of children, the mathematical demands made on adults in daily life. Written evidence should be sent to the DES at Room 3796, Elizabeth House, York Road, London SE1 7PH. ● A weekly bank holiday education book page.

Row over CBE for ICL S. Africa boss

FOR his services to UK exports, John Starkey, the 55-year-old manager of ICL South Africa, has been awarded a CBE.

Comment on the award from the Anti-Apartheid Movement and unions was stern. Mike Terry, executive secretary of the AAM, said, "This award is clearly very misguided. By its action, the British government has identified with ICL's activities in South Africa in strengthening and supporting apartheid there."

Tim Webb, national officer for ASTMS, added, "It is regrettable that anyone actively involved and based in South Africa under apartheid should be granted a CBE."

From his service as a navigator in the RAF's Bomber Command during the war, Starkey progressed through Powers-Samas as a salesman specialising in local government and the public utilities sector, to sales manager of ICL South Africa in 1969. This position he held until 1971 when he moved up to the position of sales director and then in 1972 to his appointment as managing director of ICL South Africa.

● A second ICL man, Roger Houbert, director of the company's European division and based in France, has been awarded an honorary CBE for his services to Anglo-French trade. He has been with ICL since 1946.



Starkey

Plessey to use ICL cash for new growth

FOLLOWING the sale of its 24.42% stake in ICL last week, Plessey has taken the first steps in a major commitment to the office systems market. From April 1, Plessey Telecommunications becomes Plessey Telecommunications and Office Systems, and the Communications and Data Systems division becomes Plessey Office Systems.

The announcement of the reorganisation puts the Plessey spotlight on the office market as a major area of growth. Plessey's office systems division has been a major part of the company since 1974.

The division has often been rumoured to be a heavy loss maker, though sources close to the company dispute these claims. They state that the division is profitable. The fastest growing segment of the division is the word processing market.

Five years ago, turnover was about £2 million, with 10% of that in exports. This year it is expected to be over £12 million with over 50% in exports. On paper the division is understood to be profitable, though the fact that it has been a major part of the company since 1974 has been a major factor in its growth.

Some estimates put investment by Plessey in the division at about £10 million over the last three years, but there is still

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Gareth Jones to be editor of CW

A JOURNALIST well-known to senior sections of the computer industry, Gareth Jones, has been appointed Editor of Computer Weekly in succession to Malcolm Peltz, who is leaving the paper early next month.

Jones, 30, entered the computer industry in 1970 after graduating in physics at the University College at North Wales. He spent two years as a programmer/analyst with ICL working on Computer-aided Design problems at Kidsgrove.

In 1972 he joined the editorial staff of the journal Computer Aided Design, published by IPC Science and Technology Press. Since then he has been responsible for the launch of several journals, including Microprocessors, and Microsystems, Computer Communications, and Information Privacy.

His industry links have been further strengthened by his work as a committee member of the British Computer Society, and as a member of the Microsystems, Computer Communications, and Information Privacy Group.

In addition, he has organised a series of successful international conferences on CAD and has played an active part in the development of the annual Microsystems conference and exhibition.

IBM gives Series 1 a boost

AIMED at overcoming some user criticisms of early releases of its Series 1 mini, IBM has announced a number of hardware enhancements to the system and is elevating the EDX event driven executive to the status of a fully-supported IBM product.

EDX will be enhanced with a Fortran IV compiler and runtime library and the increase in status of this executive is regarded by users as of particular significance.

According to one large UK user, EDX accounts for about 80% of live Series 1 users on the US West Coast. "It executes very well and is also easy to install. However, the fact that it features a high-level end-user language and is macro driven makes it anathema to some DP professionals," said the user.

Series 1 hardware improvements include a new ultra-compact low cost processor including a CPU and up to 64K words of memory on a single 9in by 7in board costing £3,797. There are also two new medium capacity disc drives, an ASCII programmable multi-line console adapter, an attachment of the System 34 3250 display terminal, and a new family of tape drives.

Among those welcoming the enhancements was Gamma, which last year formed a Series 1 division. A spokesman pointed out that the low cost of memory, instruments, enabling 32K to be added for £250. He said that Gamma would be supporting EDX in addition to its COS/1 Cntrl system.

Chaper memory may help to soothe users anxious about the performance and resource requirements of some of IBM's software for the Series 1, notably the RPS operating system and its PL/I compiler.

Early releases of the PL/I software were notably core-hungry and the need for frequent overlays slowed compilation dramatically. However, very considerable improvements, sometimes by as much as tenfold, were reported by those installing extra core and the associated address translator translation support.

The price cuts and forthcoming RPS and PL/I enhancements may, however, be late to placate some disappointed customers. At least one UK user is understood to have

cut back severely on original orders for the machine, and the honeymoon is over too in the eyes of some software houses, who report approaching development projects on the system much more cautiously than in the euphoric early days.

● System 34 enhancements - page 5.

INSIDE THIS WEEK'S CW

The lorry drivers' dispute has put your paper supplies in hazard, and the rail strike has hit virtually everybody but despite these problems, Computer Weekly presents its usual up-to-the-minute news and views of all things computer.

VIEWDATA POWER

The potential impact of the microchip on society has been getting most of the technology spotlight over the past year, but the effort has so far been minimal. Systems that are likely to create a much earlier impression are the public viewdata services. This week's Adrian Stokes, author of a new book on viewdata, looks at the way the public may be able to make use of this new service. Page 4

Maths inquiry

The Committee of Inquiry into the Teaching of Mathematics in Schools has called for evidence from anyone interested in the subject. It is particularly concerned about the basic computational skills of children, the mathematical demands made on adults in daily life. Written evidence should be sent to the DES at Room 3796, Elizabeth House, York Road, London SE1 7PH. ● A weekly bank holiday education book page.

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COMPUTER WEEKLY

Vol. 26 No. 836
Thursday, January 18, 1979
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New York: 206 East 42nd Street, New York,
NY 10017
Tel: (212) 687 2080 Telex: 421710

Published weekly on Thursday

Registered at the Post Office as a
newspaper. Price per copy 15p

IPC Business Press Ltd 1978

Controlled Circulation Department IPC News
Data Press (Sales & Distribution) Ltd, 40
Reading Street Lane, London EC1R 6NE, Tel:
01-437 3025

Computer Weekly has a circulation each
week of over 82,000 including the highest
fully requested circulation in the UK.
The international edition, which is
published 100 times a year, has a circulation
of over 94,000.

ISSN 0010-478

FOCUS

Away from the real world

ACCORDING to the recent British Computer Society event BCS 79 (CW, January 11), living with computing is a matter of washing machines, electronic casinos, micro robots, badges, stickers and balloons. Potential recruits into the computer industry could well believe they were entering a comic-strip world.

The real world of computing was noticeably absent from the proceedings. Amid the heavily represented academies of learning, the NCC appeared to be sharing a stand with NCR, and the police with Exeter Health Centre. Interfacing with a model railway train, ICL featured The Junior Computer 1500.

When it comes to careers in DP, even the BCS themselves have doubts. One career leaflet ends by mentioning that there are opportunities for systems personnel to transfer out of the

computer service function — hardly encouraging.

However, the show did contain some surprises, apart from the notable absence of the NCC Threshold team.

Rather overlooked was an attempt to display how DP personnel live with computers. But had the organisers approached the IDPM, a very realistic installation could have been created. This would have featured harassed DP management, aggressive users, limited budgets and time, assorted engineers, hardware and headaches.

For the DPM, living with computers is seldom a joke. Technology has to be master-minded — slot machines being very much limited to coffee, robots to the data prep section and competitions to the weekly CW Puzzler. A structural walk-through at the exhibition in no way compares with the real

LEASED LINES

E Series — A Wintree Tale

Once upon a time a little boy ran through the market place yelling "The E series is coming". Everybody was terrified and even the fire engine turned out. But it was only a boy and the Policemen K999 owned the Plug Ugly family that it was a boy. Magnus, did it again. He would be re-commenced, even dethroned out.

Well he did it again, of course, shouting "Chips to you!" and he had to be transported on the dambest to South Arabia together with lots of brown envelopes.

The next day the Plug Uglies' daughter Ayana ran screaming hysterically in fear and nobody took any notice at all.


Then one of the E Series tentacles came snaking into Lookalikeville, through the market place, to look upon the boy. Price rises, until it came to the house of Ugly, where it stopped, breathing Contracts and Purchase & Rental Notes. There was much weeping and gnashing of teeth and the inhabitants of the town ran and jumped into the Dead Sea together with Magnus and for all I know they are still in the neighbourhood.

The Moral of this story is, if you want to obtain unbiased advice about the new IBM announcement come to us. We have no vested interest, no obsolete portfolio of high priced 370 equipment, only opportunities to buy on your behalf.

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COMPUTERVIEW

Will the computer staff famine ever end?

quality computer science graduates.

And therein lies the first lesson and the first warning of this Computerview. As Professor Sumner expressed it, "Anyone under 35 in the computer business will have to look warily over their shoulders because there will be an awful lot of good young people following."

The 3,800 children who packed the BCS 79 Fun Fair (CW, January 11) provided a vivid illustration of the seriousness of this warning. It is particularly relevant in computing technology because there is such a quick de-expertising of people as the technology changes. Those, for example, who grew up with the ICL 1800 in the last decade or so will eventually become a dying breed and there will be fewer and fewer jobs for George 3 experts and more and more for VME/B experts.

The fresh-faced graduate whose first job is on a 2800 system has a start on the older person experienced on George 3 who will have to do a lot of

unlearning before learning the new system. Despite the availability of many jobs for the computer professional, therefore, any let-up in the current jobs boom could hit the oldest first.

This kind of threat from the young who are schooled in the newest technology applies primarily to the systems software and operations field. Once a Cobol programmer, always a Cobol programmer, despite the variations on a standards theme. Business systems analysts and high-level language applications programmers are less susceptible to this kind of technological outdated.

However, and here beginneth the second lesson of this editorial, there is a growing realisation that applications systems and software work is far from being the specialist craft we have been led to believe.

It is now a truism in the computer community that there are too many badly implemented systems because the implementers knew more about the computer than the application.

Manufacturers, led by IBM's Future Series' aim of making the next range easy to use by the end user, are making more and more effort to simplify user programming. In addition, the government has at last become aware that education, training, and retraining in the skills of using computing and micro technology are as important as producing technical specialists.

Although much of the government emphasis has been on micro and semiconductor technology, this will inevitably lead on to computing and information technology training in general.

The falling costs of computing power will quickly spread computing awareness throughout the young very quickly, whether it is at schools or through home personal computers. The BCS 79 Fun Fair showed just the tip of the potential interest among young people.

In industry, government and the education system there is also a very quickly growing realisation that a person in one field can quickly be taught sufficient computing know-how to become a good implementer of applications systems.

Professor Sumner said he believed there would be a growth in the number of joint degree courses, linking computer studies with other departments. As was shown at a conference in Liverpool recently (CW, November 23, 1978), the awareness that good computer systems can be implemented by other than pure maths mathematical geni, leads to two interesting reactions.

Firstly, employers of computing staff realise they can widen the pool in which they are fishing for staff, and can look to non-computer science graduates and staff experienced in the relevant application, coupled perhaps with some computer training.

Secondly, it opens the horizons of those who felt that, because they "didn't like maths

at school" — or some equally silly reason — that computing was not for them. The breaking down of some of the myths of computing will increase the supply of available staff.

All this means that the current glut of computer jobs is likely to have a limit and the fresh flow of new talent, together with an awareness among employers that the sources of potential staff must be expanded, will eventually begin to sop up some of the surplus jobs.

There is no realistic way of predicting the timescale for the ending of the jobs boom but it is clear that the end is coming into sight.

And if you feel the warning of this is too speculative, harken to the words of David Firnberg, director of the National Computing Centre (CW, January 11) who pointed out that in Finland there was a computer staff shortage three years ago but he was told last year that there was now a surplus of staff. And in France there are also many unemployed computer professionals.

Those who have enjoyed a comfortable ride on the computer gravy train should begin thinking about the future. A future where, perhaps, the track record of programmers analysts and operators in producing and running good, reliable and effective computer systems will become a sieve to eliminate some of shoddy software and systems work that has given the computing "profession" such a bad name (see Programmer Notes, page 7).

ADP signs \$25m deal with HP

THE giant US services company Automatic Data Processing (ADP) has entered the market for online computing with a packaged commercial system based on Hewlett-Packard's 3000. ADP has signed a contract with HP which "could grow to a level of \$25 million" and expects to make first deliveries early in 1980.

The new venture parallels ADP's launch last year of ADP Onsite, a packaged hardware software system based on DEC's System 2020. This, however, is an adjunct to the firm's sharing service and thus addresses a completely different market from the new system which is intended for on-site applications.

The new service will be restricted initially to the New York metropolitan area and is likely to be extended to other parts of the country. It will be operated by ADP's Business Systems Division, an operation completely separate from the firm's sharing service for which company is best known.

The Business Systems Division is already in the market for online application systems in the US, with a service based on Microdata Realtime. Customers can opt either for a contained system or a shared terminal access to a shared system run by ADP.

A company spokesman says the new systems would be in parallel with the Microdata-based equipment, and the deal did not signal the discontinuation of the earlier line.

He added that ADP's on-site commercial application system could be made to run compatibly on either system.

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Today we meet a lady from India who can do everything this half-million-pound computer can, and nine times out of ten she can do it faster.

— Tony Boyd, the presenter, putting a dial-up computer on Maggie, Thames Television.

All show space sold for Microsystems 79

ALL exhibition space, amounting to more than 70 stands, has been sold for Microsystems 79 which promises to be the major British micro show of 1979. The show, sponsored by Computer Weekly, is to be held at the West Centre Hotel, London SW6, from January 31 to February 2.

Most of the major names in the micro business are exhibiting, with a range of products covering the whole spectrum.

The associated conference also spans a similar range of interest with papers on the first two days being devoted to the problems of developing microsystems in commerce and industry; while the third day is given over to personal computing.

To obtain complimentary tickets for the exhibition and further information about the conference contact Chris Hipwell, Room 125, Dorset House, Stamford Street, London SE1 (tel: 01-261 8738).

Scots deal a severe blow to the newspaper technology revolution

THE revolution in UK newspapers technology, centred now around The Times dispute, has taken a severe blow, after a concession by management at the Glasgow Herald that journalists will not do their own keyboarding on the paper's new computerised production system. It is this issue of "journalistic front end" which is at the root of the current impasse at The Times, and which shows no sign of being broken (CW, November 23, 1978).

US tightens control of private DP schools

IN the US, the Federal Trade Commission is proposing to enact regulations over privately-owned vocational schools, in particular computer schools, following complaints from consumers about fraud and abuses.

The rules would give students the chance to drop out of courses after they start, without losing money in tuition fees.

Ed Moran, a lawyer for the FTC, says that many students enrolled for courses and then found that the courses did not provide what they expected. Many schools, however, required that fees be paid in advance and gave no refunds.

Under the proposed rules, there would be a 14-day trial period at the start of each course during which a student could drop out without cost, and those giving up after that would receive a pro rata refund.

Schools would also be required to publish statistics of job placement and salaries of their former students.

Moran said that the FTC was particularly concerned to prevent schools from recruiting students according to their eligibility for government grants.

Bernard Ehrlich, of the National Association of Trade and Technical Schools, said that the rules on refunds would push up fees for other students, as the schools had to budget for the number of students who registered at the start of courses.

"If a student drops out, you can't drop an instructor to make up for the tuition loss," he said.

Union concern over VDUs

ADDING to the controversy surrounding the health hazards facing VDU users, TASS, the engineering staff union whose members both make and operate the units, has issued a paper, entitled the Health Hazards of Visual Display Units.

It points to the problems of clerical workers, many of whom are now expected to operate the devices. It states that clerical

work has to be performed in bright light but that VDUs are best viewed in shady conditions.

The paper says that the union is concerned about hazards relating to eye fatigue, stress, poor posture and radiation. In the latter case, it stresses that the units should be serviced regularly by qualified engineers, so as to minimise the danger.

French investment plans

SYNTEC, the French trade association for bureaux, software houses, and consultancies, has expressed satisfaction with the French government's plan for major investment in computing and microelectronics (CW, December 14, 1978).

The French services industry, the largest in Europe, is particularly pleased that its importance has been recognised and that

contracts for Ministry of Industry funding for expansion have been signed with service firms along the same lines as previously for mini and peripheral manufacturers.

The bureaux, however, are worried that the French PTT, having got involved in data communications, is to try to expand into providing data processing.

positors' union, the NGA, is not allowing its members to take other jobs, but is paying them dispute benefit on the grounds that they have been victimised.

Journalists on The Times have commissioned a study by the consultancy Job Ownership Ltd on the feasibility of converting the paper into one or more workers' co-operatives.

Journalists at the Glasgow Herald, on the other hand, are unhappy that direct input is not to be brought in, because they had been promised extra money to use it. Consequently they have gone on strike, stopping production of the paper.

Glasgow Herald management is refusing to comment on the situation, but it is understood that installation of a computer-based photocomposition system with VDUs for input of text will go ahead, the VDUs to be operated entirely by former Linotype operators working from paper copy, rather than by the journalists themselves, who will continue to use typewriters.

About £10 million is being spent on new hardware and on converting the old Scottish Daily Express building to house it.

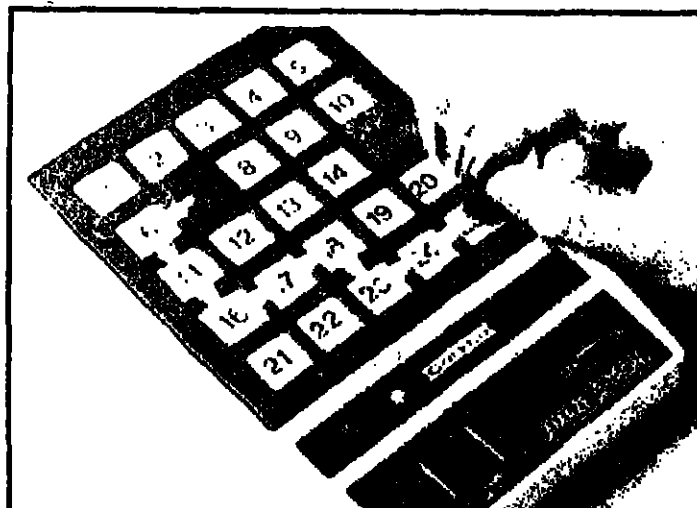
Composing room staff of the Herald and its sister paper, the Evening Times, was to have been cut from 237 to 88, but now only about 40 jobs will go.

At The Times, one of the biggest unions, Natsopa, which covers press operators and clerks, has joined the compositors in refusing to talk to management until notices have been withdrawn and those who have lost their jobs reinstated.

Ken Wiltshire, of Natsopa, said they were prepared to talk about reducing manning levels, but only so long as no members had actually been sacked. Thus prospects for reopening negotiations at The Times look bleaker than ever.

About 800 staff have been laid off at The Times so far, with about 100 more joining them each week. Nearly all the Natsopa members have been found jobs on other newspapers. The press operators are doing casual work on other papers which have increased their print runs to fill the gap left by The Times, and the clerks are mainly employed in Fleet Street or magazine offices nearby, where "temps" are being displaced on instructions from the union.

On the other hand, the com-



Amazing micro game that five-year-olds can play

THIS is Amaze-A-Tron, one of a range of new microprocessor-based games that are being introduced at this week's TV Microelectronics and Microprocessing Exhibition at the National Exhibition Centre, Birmingham, by Spectrum Marketing.

It is a maze game for one or two players, specifically designed for children aged five and upwards.

It is joined at the show by Zap, a missile game for two players; Digita, a code game using numerals instead of colour-coded pegs; and Lil' Genius, a learning calculator designed to teach the rudiments of arithmetic. The retail prices range between £9 and £18.

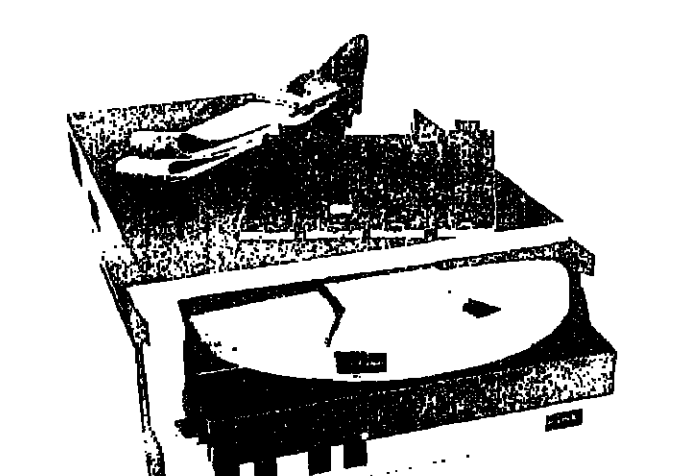
Spectrum also showed what it called a computer games system, essentially a desk-top calculator for home or office use which also incorporates a number of games for solo players.

Avery rejects £83m GEC bid

WEIGHING machine maker W & T Avery of Smethwick has rejected GEC's £83 million takeover offer made last year (CW, December 7, 1978) on the grounds that it is "well advanced in the application of electronics to weighing equipment" and "does not expect to be constrained from expansion by lack of technical or financial resources", according to a company statement.

Illustrating this, Avery has installed load cell weighing machines under six chlorine tanks weighing up to 500 tonnes each, and linked them via its CTC model digitiser to George Kent K70 PDP-8 based process control computers at ICI Mould's Laskov works in Cheshire. It had previously installed digitised systems for the British Steel Corporation, other chemical companies and brewers.

Remember the RK05?



The manufacturer doesn't:

The old RK05 was recently replaced by the new RL01, and as disc drives go, the price is nice.

Until you figure in the cost of converting all your media (to media that you can get from only a single source), and the cost of the new controller, new software and the entirely new support situation that you'll be facing.

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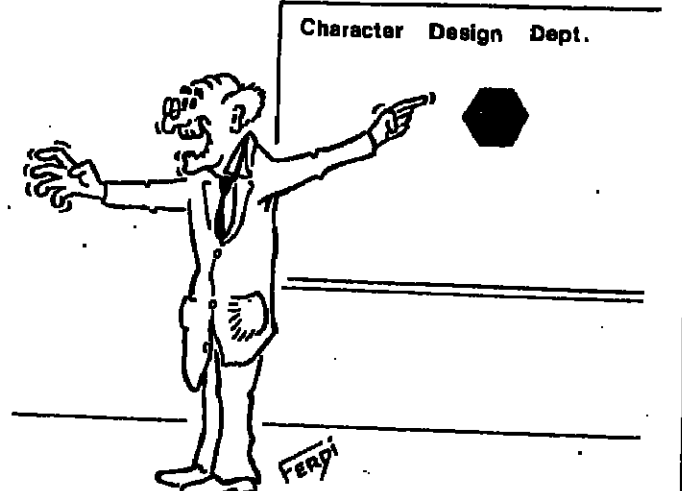
Manchester: Duncan Hilton 061-440 8485.

Downtime

Great fun for the kiddiewinks

APART from one's not being able to move in the crush of people, the BCS Fun Fair was a most jolly affair. (See CW, January 11.) I must say I felt slight twinges of impending old age, listening to all those pretty little teenyboppers chatter about ferrite cores, run-time compilers, and so on. Still, it was a great opportunity for the frustrated showman in the industry to exhibit themselves. Barney Gibbons of CAP was really in his element, doing all the barking over the Tannoy and slapping stickers on every chest within reach. CAP was very much in evidence, as it can hardly fail to be when represented by Dick Waller (who is getting on for seven feet tall).

I had a startling experience when talking to Dick on the Byte Shop stand. Now, I am on the tall side myself, having suffered many a bruised



"Look, everyone: I've invented a new character — a hexadecimal point!"

All the dirty bits

LIFE has been imitating Art again. Following my speculation last week about computerised sex, we spotted an advertisement for a Soho cinema club showing a film called "Computer Game". Arming himself with his company-issue dirty mac, my pornography correspondent set off to investigate.

He came back threatening to sue under the Trade Descriptions Act. Apart from being positively the worst film he had ever seen, it contained no computer whatsoever. What a disappointment. What story line there was concerned a man who ran a bogus computer dating service (and others) up to his den. I will draw a veil over what went on when they got there; what a pity the film did not as well — it was very boring. There was one memorable

Bandwagon driver

IAN LLOYD, the Conservative MP for Havant and Waterloo, was making some smug "I told you so" noises at a conference on micros recently. Other MPs used to regard him as a crank back in the Sixties when he first started asking, "What are we going to do about the computer?"

Now things are different. At the time of the Horizon programme on micros last March, Lloyd said, "You could actually hear the bandwagons changing gear all

The viewdata age: Power to the people

IN recent years, the computer industry has been revolutionised by the impact of microprocessors but the effect on the general public has been less noticeable, although in the last year there seems to have become more awareness of the silicon chip. The major application of this technology so far appears to have been in the field of digital watches and clocks and items such as electronic door chimes.

However, within a very short time, it is likely that there will be a very significant impact through teletext/viewdata where such technology is introduced into a television set giving a very powerful tool to millions of people. In this context, millions is certainly not an exaggeration, since the Post Office's projected figures for the growth of its viewdata service, Prestel, give a market of some three million sets by 1983. Of these, about 20% are expected to be business users, the remainder domestic customers. The cost of a suitable television set is now around £700 and, as happened with colour television, the cost will probably plummet as the market expands.

The public service Prestel is just getting under way but although there have been some articles covering technical details of the system (and of the broadcast teletext systems, such as the BBC's Ceefax and ITV's Oracle), little attention has been paid to the effect that such a system will have on both the domestic and business markets.

In the domestic market, Prestel will give a user, in his own home, access to a large database. Although the size of the viewdata base is potentially unlimited, it is likely that each Prestel computer will have access to about a quarter of a million pages of data (where a page can be considered to be one screenful).

While this is a very large amount of data, it is by no means infinite and hence its principal role is likely to be as a first line of inquiry rather than the fount of all knowledge. Even with this relatively limited role, it will replace a large number of disparate sources of information and will provide a quick and simple user interface to that data.

In many cases, it will be possible to get all the required information via Prestel; in others it will not, or it may be presented in a convenient form. For example, if a user wanted to know the time of arrival of a train, Prestel would be very convenient since the data could be found very quickly and the user has to copy a small amount of information. On the other hand, if the user wished to find an Act of Parliament, Prestel would probably allow him to find the appropriate Act and determine that it was the one he required. But until some local storage medium is provided, it would be impractical to copy all the information and the user would have to rely on more conventional methods to obtain it.

In this case, it is obvious that one ideal location for a Prestel terminal would be a public library, probably on a "coin-in-the-slot" basis.

Viewdata, as opposed to teletext, is an interactive medium and this facility is again likely to have a significant



By Adrian Stokes

Millions of people will shortly have access through their domestic TV sets to the powerful technological resources of viewdata in its various forms. The significance and relevance of this development is here assessed by Dr ADRIAN V. STOKES, author of a new book, *Viewdata: A Public Utility*, published at £9.95 by Input Two-Nine Ltd, 7 Banstead Road, Purley, Surrey CR2 3ER (Tel: 01-668 5281).

impact. Perhaps one obvious use is the provision of games such as noughts-and-crosses, Star Wars etc. Although scarcely likely to have a profound sociological impact, it is quite likely (to judge from the sales of television toys already) that such usage might form a considerable part of the total usage of the system.

On a rather more serious note, it is clear that the system can provide, by means of the interactive facility, access to many of the functions of a computer, although the majority of users will be restricted by only having a numeric keypad. Nevertheless, a large range of facilities could be provided, including being able to program the computer (cf programmable calculators).

Although the full facilities of a computer would not be provided, the facilities that could be provided are likely to be more powerful than are obtainable by use of a calculator, and are likely to be similar to those provided by small "home-brew" computers.

Another obvious use of the interactive capability is the provision of "response frames". A supplier of information (an "information provider") sets up a special type of frame which has areas where the user can insert information. When he has completed the frame, he checks it and then, if correct, "sends" it to the IP who will then take the appropriate action, for example, sending goods and debiting the cost to the user's credit card.

A rather more sophisticated use of the interactive functions is "teletextware", in which an entire microcomputer is contained in the terminal and software can be "down-loaded" into the micro. Of course, for standard programs, teletext may be used but viewdata gives the user the facility of writing his own programs. Some experiments have been carried out on this concept and some programs have been transmitted over the broadcast services.

What of the business user? The uses of viewdata are perhaps not as obvious as they may appear at first sight, since in many cases either a dedicated system or perhaps no system at all is more cost effective. However, between these two extremes, viewdata can fulfil an important need, particularly as a means of communication between organisations which have

no direct links or common systems. In addition, of course, it provides a very convenient means (provided the projections of the number of users are accurate) of advertising to the public at large and perhaps one can now see that, whether in the domestic or business market, viewdata can perhaps best be regarded as another form of publication with other means that it can disseminate information almost immediately.

There is one other area where viewdata has great potential, and this perhaps exemplifies uses to which the system can be put in the future. This area is its use for disabled people. For physically disabled people, it is quite clear what the advantages are — access to data which might otherwise be totally inaccessible, the ability to order goods and services without moving from home and so on.

However, it has many uses for other groups of disabled people, such as the deaf and blind. In the case of the former, it provides a means whereby they may communicate over the telephone (using, of course, an alpha-numeric, rather than a simple numeric, keypad) and the Post Office has demonstrated a rather elegant system for such use. It is perhaps worth mentioning that the original proposal for teletext envisaged it as a means of substituting television programs for deaf people.

It may sound odd to suggest that viewdata may be used for blind people since it is essentially a visual medium but it does not appear to be too difficult to interface a voice synthesiser into the system thereby giving a vocal representation of the data, and some experiments are already in progress.

This year will see the start of the Prestel public service. While the concepts and technology used in the system may not be earth-shattering, it is probable that its impact will be very far-reaching, probably far more so than when the system was proposed at the beginning of this decade.

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What a girl of 13 thought of the Young Computing Fun Fair.....

THE BCS 79 Young Computing Fun Fair (CW, January 11) attracted almost 4,000 children to its mixture of entertainment and education. To get the view of the show's target audience, Computer Weekly is publishing this report by 13 (going on 14) year-old Virginia Firnberg (pictured right) daughter of National Computing Centre director David Firnberg.



VIRGINIA FIRNBERG

Virginia says her ambition is to win Wimbledon 32 times and then become a jazz pianist. Here she does a poetic hat for a report in verse she headlines: Can't think of a name.

I wake up in the morning
in my warm and tempting bed
To find I have to go
to the computer thing instead

Gloom, Gloom, impending doom
I'll have to find an excuse
that I can't think of any
that are worth a penny
So I fill my head with abuse
Dressed, washed and breakfasted

I make my way to the car
the traffic's tough
And I'm feeling rough
Now we've got this far

But what a surprise
when I open my eyes
And go through the door to the show
for it's not what I thought
When I lay in my bed and found I had to go

My gloom and despair fades
in the air
with a plastic bag and things in it

I look around, which amazes and astounds
my eyes and my chain of thought
With bright colours here
and computers there
And a thick crush in which I get caught

For me the best part was the computer art
which took the machine to its limit
that the lecture and film
I found boring and dull
I was sorry I'd decided to sit still

Although my day had begun with no thought of fun
and regretful I'd answered Dad's call
The thought in my head
of retired to bed
Was: "Computers aren't a bad offer at all"

IBM announces more communications software for System 34

SIGNIFICANT additional communications software has been announced by IBM for its System 34 small business system.

Available in the first quarter of 1980, the enhancements to the operating system enable networks of System 34s to be set up using the SDLC communications protocol. Networks can be both point-to-point and multipoint. In the latter case one System 34 serves as the primary station, and communicates with secondary System 34s as a collection of logical point-to-point links.

The SDLC facility is usable only between programs written in Cobol or RPG II. Up to 64 concurrent sessions in both directions can be set up.

The interface does not, however, enable a 3270 display terminal to be attached to a System 34.

The announcement also includes several enhancements to the System 34 Cobol, including additional syntax for read-write verbs, and verbs for the acquisition and release of workstations.

GDG loses control of Elbit

ISRAELI's only computer manufacturer, Elbit, has passed into local control following an issuing of new stock representing 25% of the company. The issue of shares raised \$5.3 million, and the effect was to reduce Control Data's stake in the

mini-maker to 37%. Control Data previously had a controlling 51% in Elbit, and the Haifa-based company supplies its System 17 minicomputers OEM to CDC for sale as the CDC Cyber 18-17 model in the Cyber 18 line.

STRONG demand for the powerful new 2200 VS database-oriented business computer, and rapid growth in word processor sales, have pushed Wang's first-half turnover and profit figures to record levels. For the six months to December 31, Wang's net profit rose 88% to \$9.7 million, turnover up to 57% at \$130.8 m.

Babycham planning application loses its sparkle

A PROPOSAL by Showerings, makers of Babycham, to build a new computer centre in Shepton Mallet, Somerset, is threatened with rejection by Mendip District Council Planning Committee.

Although the committee has not yet met to decide the matter, it has been suggested that because the proposed site falls within a conservation area, building permission may not be granted.

A site visit by committee members was planned for December but this had to be postponed due to bad weather. A further meeting to decide a date was held earlier this week after Computer Weekly had gone to Press.

No details of the applications or systems that the centre would feature have been released by Showerings, which is part of the Allied Breweries group.

If the district council approves the proposal, there would still be one hurdle to beat; the larger Mendip County Council has the final say.

"All we can do without the county council's authority is refuse the application," said a district council spokesman.

No plug-compatible users in IBM CUA

By Keith Jones

PLUG-COMPATIBLE CPU users look like being left out in the cold by the IBM Computer Users Association, following a decision by the CUA Council not to propose a change of rules to allow them membership. Seas, the technically oriented group for bigger IBM users, has also decided that it prefers to exclude non-IBM CPU users, at least for the time being.

The CUA Council's decision was based on the results of a survey of members which was initiated last summer (CW, August 31, 1978) and carried out under the direction of the CUA deputy chairman, Graham James of Empire Stores.

According to a CUA spokesman, the decision means that the council will not propose a change to the conditions of membership at the CUA annual meeting in April. But he pointed out that a notice could be tabled by an individual member at the meeting so that it was possible that the rules of membership might still be changed.

The main condition of CUA membership is that a user should have at least one IBM computer installed or contracted for. But the machine does not have to be a mainframe, so that a user who has replaced all his IBM mainframe hardware with plug-compatible kit can qualify for membership if he has a Series 1 minicomputer, for example.

However, each application for CUA membership is considered on its merits, so that an Amdahl or Intel user who happened also to have a Series 1 would not automatically be admitted.

A user with at least one IBM CPU does qualify for CUA membership, even if the rest of his CPU hardware is plug-compatible.

A spokesman for Seas told

Computer Weekly that the group had discussed the question of admitting users of plug-compatible CPUs but had decided against allowing them to join at the moment. However, the situation could change in the future if IBM unbundled its software charges in a big way so that plug-compatible CPU users also became major IBM software customers.

The conditions of Seas membership at the moment are that a user must have an IBM 303X, a 370 or a 360 processor, provided the latter is a 360 Model 44 or bigger. Seas, which is the European counterpart of the US group Share, has about 200 members, most of them big technically-oriented users.

Guides, which has about 1,000 members in Europe, mainly commercial type organisations, stated last year that it would not admit non-IBM users (CW, August 10, 1978).

Govt seeks evidence on formatting and storage

EVIDENCE from the computer community on techniques for formatting and storing archival records is being sought by the government's Committee of Inquiry into Public Records.

The committee is charged with reviewing the arrangements for selecting and preserving public records, particularly in the light of technological changes. A good deal of government information already comes from computers, for instance at the Central Statistical Office, and views are being sought on how access to this can best be provided after it has been handed over to the Public Records Office for preservation.

Anyone wishing to give evidence to the committee should send it to Graham Aylett, the committee secretary, at 38 Parliament Street, London SW1 not later than April 30, 1979.

ICL waits for US decision

THE issue of whether ICL can sell mainframes incorporating US-made Intel microcircuits to the UK Atomic Energy Commission without prior US government approval has been referred to the Department of Commerce (CW, January 4).

ICL says that the Department has promised an early reply but that it is still studying the case.

Earnings up

SECOND quarter revenues to December 10, 1978 of \$188.2 million, a jump of 42% over the same quarter of the previous year, have been recorded by National Semiconductor. Net earnings on this total \$2.1 million, a rise of 43%. This gives National a first half revenue for fiscal 1979 of \$353 million, with earnings of \$1.68 million.

Wang's first-half figures at record levels

The company reports that sales of word processors outside the US in the first six months of the current financial year were greater than those recorded in the whole of the last financial year, when the business amounted to \$4.5 million.

Backlog of orders currently stands at \$117 million, double the figure a year ago, and 31% up on the figure for the first quarter of the financial year. Overall, business was particularly strong in the October to December quarter, with net profit up 82% and turnover up 80% compared with the same period in 1977.

The company will be spending \$14 to \$15 million on research and development in the current year — 75% more than last year.

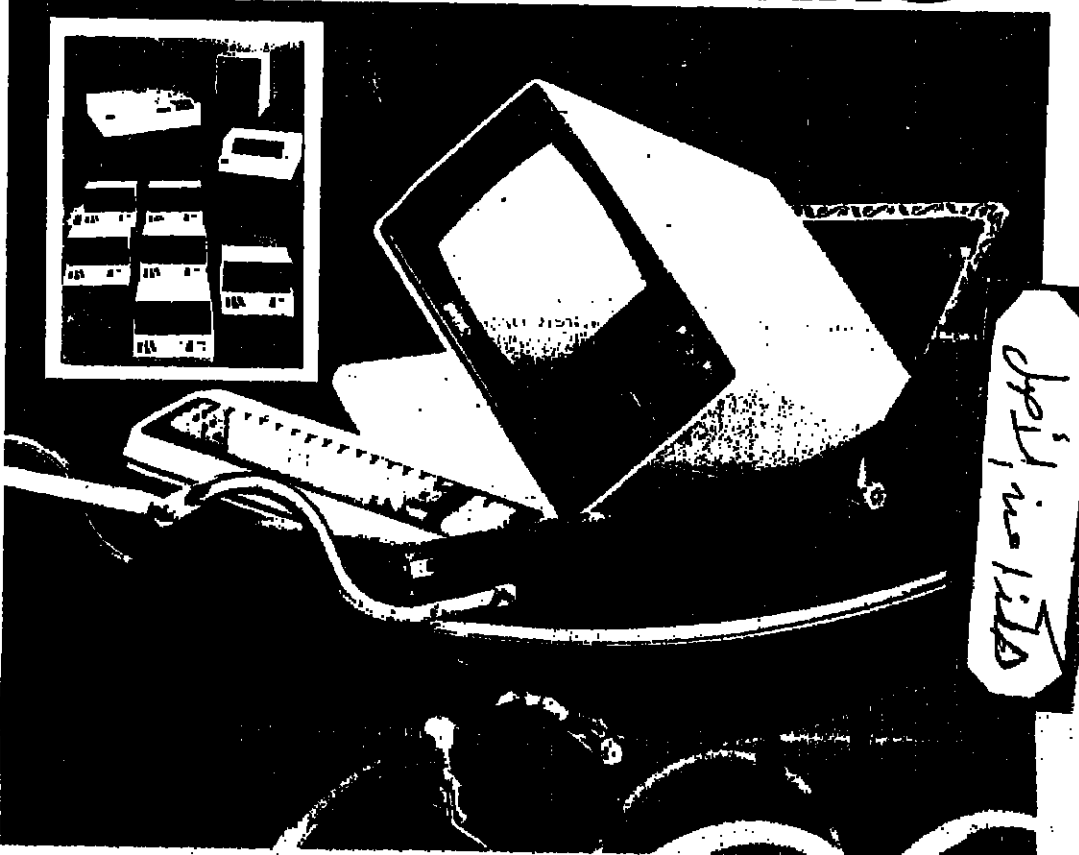
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GILB'S MYTHODOLOGY

To keep up
to date, get
a technoscope



HOW does the computer professional keep up to date with the rapidly changing technology, while giving priority to immediate job needs?

The question must be an important one, since I find that my course participants usually ask it of me at the first lunch of every course I hold. As a consultant, writer and teacher it is in the nature of my job that I must try to keep right up to date.

I am pretty sure that my personal approach is not for everyone, and I don't feel like pretending I know the right answers for each individual. But I hope that if I describe some of the approaches I have found useful during my 20 years in the data processing field, some of you will find a few ideas you can use.

One of the first things I question is the goal of being "up to date". At least this deserves careful qualification. My grandfather, it is said, rarely wasted time looking at motion pictures less than 25 years old. His reasoning was that if they were still being shown, they must have demonstrated some merit. Certainly this story reminds us that we need some efficient mechanism for selecting the things we are going to learn about.

There is clearly no way any of us could absorb even 1% of all the published material in or related to our field, not to mention less formal information sources. Maybe if we limited ourselves to learning only those principles which had survived for at least 10 or 20 years, we would be using our time well.

Consequently, one of my first principles of keeping up to date is to refuse to spend too much time with the latest fad or announcement, and to spend time learning about the many things which are clearly of a more classic nature.

For example, in the programming area, the subject of quality assurance (inspection, reviews, team reading of programs) is in many ways a "poor" subject. But we all know that the concepts of quality assurance and auditing are very important parts of other equally complex disciplines, therefore I have concluded that it is worth learning as much as possible about them.

Similarly, questions of motivation and human psychology are emerging as really important issues in soft-

ware project management, and we can safely assume that any investment in learning in these areas, from psychologists, conventional management literature or even perhaps our computer colleagues, is bound to be of benefit.

Another area to which I have devoted some attention is the measurement of software qualities. Again we have the classic management and engineering experience that measurement ability gives control, knowledge and progress. This motivates me to invest my time in learning measurement technology from other disciplines, and even some of the primitive concepts emerging from computer disciplines.

This leads me to another subject dear to my heart. It is far more important to learn about perception techniques than to waste time listening to someone else's personal judgment.

The systems many of us are forced to take a position on almost daily are so complex that human beings have great difficulty in understanding them and judging them in any conclusive way. Each of us has a different set of goals, and these are primary instruments for understanding the "goodness" of any technology for us, at this point and later points in time.

In order to judge the goodness of a technology we need, therefore, to get reliable data on the many dimensions of it which relate to our own varied goals — cost, time, risk, reliability, ease of learning etc.

In addition we need some method for putting all this information together into a meaningful whole, a "how good for me?" picture.

I find that almost none of my colleagues are formally trained with any reasonable set of perception tools.

The tools are there, and I believe that they have been known to us for decades in the case of some of the better management and engineering tools, and for centuries in the case of some of the more classic thinking and perception tools.

Until an adequate set of perception technology tools has been mastered, I don't believe that we are justified in spending your time in "keeping up to date". Once you have mastered the basic art of seeing the qualities of any technology or system, no matter how new or

complex, you have what I like to call a "Technoscope". This is a basic tool for examining the "future shock" rate-of-change pouring in over us. You will have a mechanism for selecting those new technologies which are of potential importance to your daily work. And, more important, you will have a reliable mechanism for deciding NOT to study further most of the technical details being flung at you.

I find that I have this capability, and that it is easily picked up by others. But I have had to teach it to myself over the last 10 years, it was never offered to me in the data processing business. The technoscope is not just a tool for me, but is for sharing my understanding with others, and beyond that, giving others the power of seeing things which I have not yet learned.

I'll get back to this subject sooner or later (there is so much more to say). But I feel the most important points had to be given first. In an attempt to summarise I'll list my steps for managing the ever present stream of facts and findings.

- State multiple goals clearly and as measurably as possible.
- For each potential solution (new technique) ask first, before getting into mechanical how-it-works detail, if measured facts are available in the goal areas.
- If such facts are available, go further and evaluate their degree of satisfaction for the goal areas.
- If such facts are not forthcoming: STOP. Don't waste your time. Challenge whoever is selling the ideas to provide such facts. Get yourself a technoscope: it is the best help in keeping up to date with a minimum of effort. I have to use my technoscope daily to survive in this jungle.

Plant register package for the PDP-11

AN asset management system capable of running on any DEC PDP-11 DataSystem has been launched by Time Utilising Business Systems, of Leicester. Called Tplant, the package provides a means of maintaining an up-to-date plant register while generating a variety of reports on such aspects as depreciation, insurance and costs.

Two basic report types are generated: a full plant report by location, and a plant profit and loss report on disposal. The system will also produce an action report, highlighting plant that is due for periodic management attention, such as re-insurance.

An important aspect of the system is its facilities for current cost accounting. Explicitly designed to meet the requirements of the Hyde guidelines on inflation accounting, these permit the user to apply inflation indices specific to each asset category — and produce appropriate reports.

Although Tplant was written using Tube Cupid-11 file management system, this soft-

SOFTWARE FILE-1

APL*Plus available for in-house use

THE options available to those wanting to run APL in-house have been extended considerably by Scientific Time Sharing Corp and its UK operation, APL*Plus Ltd.

In addition to introducing a packaged APL minicomputer system (CW, January 11), STSC has announced that it is to market the software alone for in-house use. This will include not only the firm's proprietary APL*Plus but also a series of enhancements to IBM's VSAPL. Scientific has sold APL*Plus

to customers before for in-house use, but not for some years. Its re-introduction now as a software product complements the availability of the software as a component of the Quad 100.

As on the Quad 100 system and STSC's Amdahl installation at Bethesda, Maryland, the software depends on the support of IBM's OS/MVT operating system. On a larger in-house machine, though, users will have the option of running MVT as a virtual machine under VM/370.

The restriction of APL*Plus to IBM's non-VS operating systems is thought to be the principal reason for STSC's decision to offer VSAPL enhancements.

The company has been running a VSAPL service in parallel with APL*Plus for about a year and in the first software product release has made available features for formatting and file management. These will run under the control of VM/370 as an "interactive processor."

At the same time, the firm has strongly hinted that VSAPL will be the basis for most of its future developments. According to the UK managing director, Michael Branson, it was possible to envisage its eventual enhancement to the point where it would match APL*Plus in facilities.

Branson also clarified STSC's plans in the systems business. While the Magnuson-based machine would be the first to be offered in the UK, it was only one of several 370-compatible processors that might be used in the future. All the systems, though, would share the name Quad 100.

In addition to selling its system software for in-house use, STSC will also be making available its proprietary applications packages, including the Financial Planning System and the Comprehensive Manufacturing Control System.

Production control thrust by Informatics

FURTHER confirming its commitment to the applications software market, Informatics has created a new corporate post of vice-president, application products, and has at the same time reaffirmed its interest in one specific application area, production control software.

First to take up the new post will be John Spivey, who was formerly vice-president responsible for US and Canadian sales. He will now be responsible for the development of the application product line, and the expansion of international markets for these products.

One application area in which the firm is likely to be particularly active is manufacturing industry.

Although it has previously been disappointed in its marketing of manufacturing software, notably the Production IV system (Software File, August 3, 1978), Informatics still sees this as a large and relatively undeveloped market.

It intends, therefore, to continue to offer consulting services to manufacturing industry and "will continue to market Production IV, though on a different business basis."

One of the problems previously was the degree of technical involvement required from the user. Informatics' manufacturing systems division has now been restructured to emphasise the development of customised

manufacturing systems. These will use Production IV software as basic building blocks.

The new service will be marketed both in the US and in Europe. Meanwhile, information is beginning to emerge on the firm's latest introduction, its personnel management system (Software File, August 3, 1978). Called Management IV/Human Resource System, this is described as a flexible, end-user oriented product, integrating a comprehensive database with the company's well-known Mark IV data management system.

NCC to investigate product licences

HOT on the heels of the CSA, which recently published a set of guidelines on software product licences (Software File, November 23, 1978), the NCC has set up its own working party to report on the subject.

With the growing number of software packages being

purchased, says the NCC, computer managers need to draw up suitable contracts to cover purchase, installation and maintenance.

"The investigation," it continues, "will help managers to understand the nature of sales contracts — such as terms that should be covered — and will help to equip them with the necessary contract negotiations."

The working party, chaired by NCC group director E. D. Scriven, aims to produce a handbook along the lines of the NCC's book on hardware contracts, published in 1977 (CW, August 11, 1977).

Other members of the working party include a representative of the Institute of Purchasing Officers, and others from the Central Computing Agency, PA Management Consultants, Digital Equipment, Simplicity Patterns, and Babcock and Wilcox.

Scicon market research

A MARKET research service has been introduced by Scicon Computer Services, supported by Scicon's twin divisions, installation, at Milton Keynes. The service is based primarily on four software packages.

These include Ispat and Pat for interactive and batch analysis respectively. Statistical analysis programs offered by Interstat and Batchstat, the latter being well-suited to multivariate analysis of large data volumes.

Other software supporting the service includes Scicon's own term sales forecasting and financial planning models.

SOFTWARE FILE-2

Datasolve offers Asas

A FURTHER success has been notched up by Atkins' finite element system Asas, with the first installation of the package by a commercial IBM-based bureau, BOC Datasolve.

To be offered to Datasolve clients soon, the software will run under MVS, and will be supported by engineers from both Datasolve and Atkins. Clients will thus be able to select the level of service required, ranging from basic computer analysis to full stress analysis consultancy.

The Asas version supplied is capable of handling both static and dynamic engineering problems, Atkins notes, adding that the power of the IBM/Amdahl host system will meet the need for stress analysis of increasingly complex structures such as the dynamic analysis of offshore jacket structures.

Q-PAC Services

THE company now supporting the Q-Pac payroll package, Q-Pac Services Ltd (Software File, January 11), is to take over all UK marketing of the software from the end of the month.

Q-Pac Services was originally set up by the South African parent company in the early 1970s, but has been dormant since PPL took up the UK

agency for the product.

According to Q-Pac director David Toron, the decision to re-activate it was taken last year following user criticism of PPL support arrangements (Software File, May 25, 1978).

Q-Pac Services is at 62 King St, Maudenhead, Berks. Tel: (0628) 71824.

PROGRAMMER NOTES

Troublesome stuff

"SOFTWARE is troublesome stuff" should be regarded as the most pointed understatement of the embryonic new year.

It was uttered by that inveterate "practical philosopher" of computing Murray Laver when he gave the first annual BCS Lecture (CW, January 11).

Expanding this thought, he went on to say that poor soft-

ware is so important a matter as computing needs to build on a firm theoretical foundation. He commented that he was awfully conscious of any subject which "courts respectability by including the word 'science' in its title."

Although computer sciences were attracting large numbers of students, he perceptively suggested that the reason for this might be the same as one suggested in defence of studying classical Greek literature, that "it not only elevates above the vulgar herd, but leads not infrequently to positions of considerable emolument."

"What makes a subject academically respectable," he added, "is that it should be analytical, coherent, teachable and tough; computing science meets some of these requirements, although rather too much of its toughness is intellectual gristle rather than sinew, for there is much detail but few broad principles or general laws."

Having pointed out the main developments in computing technology, ranging from distributed computing and parallel processing to the need to handle the real world of "life's unstructured, non-symbolic and generally gaffy data," Laver said he hoped the "rather tentative and confused advance" of computer sciences did not deny to commercial and industrial computer users the "strong theoretical support needed to stay in business and out of trouble" as they exploit new information technologies.

● Computerview on the jobs market, page 2.

Puzzler

MR I. le Duc, of Cuckfield, Sussex, was one of several readers who sent in alternative answers to the Christmas puzzle problem (which called for a solution to 4XDEUX = HUIT, with E even). It now seems that the alternative answer given at the time — DEUX = 1324 and HUIT = 5296 with E odd — is in fact the only unique form after all.

Mr le Duc ended his letter by putting forward the following alphabetic for readers' mystification.

L I F E
L E S S
+
D E A D
with F known to be 3. See page 61 for solution.

Microcode for large machines increasingly popular with IBM

ALTHOUGH, in common with other manufacturers, IBM has traditionally shied away from microcoding its top end machines, it now sees a micro-coded instruction set as an increasingly desirable feature of its most powerful hardware.

This was made clear by an IBM speaker at the recent BCS 79 Living with Computing conference.

Addressing the Measurement of Computer Performance Specialist Group, Oliver Winttingham of IBM (UK) explained that "real performance advantages" were the reason for in-

creasing IBM use of microcode in its large machines.

This meant, he said, the performance seen by the user at levels of architectures such as SNA, IMS DL/I, MVS, and language processors.

It was meaningless, Winttingham noted, to argue in this context about millions of instructions per second (MIPS), as a single microcoded instruction could do the work of many conventional instructions.

Winttingham used as an example Extended Facility, IBM's accelerator package for MVS/SE consisting partly of conventional coding improvements and partly of microcoded routines.

"The microcode assist added to the machine 14 instructions specifically useful to MVS, by exploiting the processor's

potential for parallelism at the lowest level, these allow the operating system overhead to be reduced.

"For example, in the case of one MVS function, the software implementation took 56 instructions and required 332 machine cycles for its execution. When microcoded, the function reduced to a single microcode instruction that executed in 70 machine cycles."

Among savings that microcode could achieve were a reduction in the number of status saving and restoring operations; a reduction in the need of validity checking; fewer repeated fetches and stores; and the elimination of the instruction fetching overhead.

Thus a machine with a micro-coded instruction set offered scope for increasing the speed of

system software through the microcode implementation of frequently used routines.

"Microcode implementation of such functions is analogous to writing the key portions of a high-level application system in assembler."

One aspect of this analogy, Winttingham noted, was that identical criteria applied.

"Among key considerations, for example, are whether the function is stable enough that it is unlikely to be modified, and whether it is really used enough to justify the effort of a lower level — and thus more efficient — implementation."

"When you look at most systems, the critical kernel usually turns out to be very small indeed. Rewriting additional sections gives rapidly diminishing returns."

Winttingham was subsequently challenged on the detailed application of this trade-off in the case of IBM's VS/1.

Geoff Brown, chairman of the specialist group, commented that the Dispatcher was one of the most intensively used functions in VS/1. Yet when IBM had produced an assist for the operating system, only the last five instructions had been microcoded out of the nine or 10 pages of assembler which constituted the Dispatcher.

Winttingham confessed that he was not familiar with the details of VS/1.

While microcode can undoubtedly contribute to reducing system software overheads, there have been suggestions that its potentiality is of at least equal significance in IBM thinking (Software File, April 13, 1978).



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OP SPOT

A problem shared is a problem halved—use others' experience

AT some installations it is company policy to recruit operations staff at trainee level only. This is to the advantage of the site management who are thus relieved of the need to cure the new recruits of any "bad" operations habits, and are able to indoctrinate them into the installation way of working quite easily.

But in the long term this scheme tends to have a detrimental effect on the operators themselves; they tend to acquire a rather narrow, or limited, view of operations and are in no position to judge whether or not they are treated fairly by the installations. Operators at such sites just do not know how other installations are organised and run.

This situation is brought to our attention by an operator who is employed at one such site. In the absence of any organisation or body capable of establishing and maintaining standards in operations he poses some direct questions. In essence he asks:

How are the operators to know if the site is up to scratch on health and safety matters? And what of facilities for the operators?

How are they to know if their basic salary and shift allowance are as high as they should be? Unions. Do established unions appreciate the problems faced by operations staff? And what do such organisations have to offer the operators?

Well, someone, somewhere, once said that a problem shared is a problem halved — a thought which applies very much to the difficulties that operators often meet. Operations staff must communicate with counterparts at other installations; there exists within the operations fraternity a vast wealth of experience and knowledge, and there is often someone who has the answer to a particular problem. It is folly to waste this expertise.

More specifically, and referring to the question on health

and safety, operations staff should be aware of the legislation that exists for their benefit. Under section 26 (1) of the Offices, Shops and Railways Act of 1963, a first-aid box or a cupboard, containing solely first-aid requisites, must be provided for use by employees (Op Spot, June 8, 1978). This nearly always means that when shifts are worked, a first-aid box must be placed in the computer room and be under the care of a responsible person.

If this facility is not provided at your site, discuss the above Act with your operations manager. If he doesn't respond in a prompt and appropriate manner contact your local branch of the Health and Safety Executive and get them to take some action on your behalf.

Also inform your operations manager that both the St. John Ambulance Brigade and the Red Cross stage first-aid courses and charge less than £10 per person trained.

Incidentally, under section 27 (1) of the Offices, Shops and Railways Act, you are entitled to refuse to work in an area that does not have suitable fire-fighting equipment. In terms of the computer room, this means an automatic CO2 system, or manual equipment.

Under the Health and Safety Act at Work Act, no employee should work for more than five and a half hours continuously. Such a period must be followed by a break of at least thirty minutes, remote from the place of work.

On October 1 new powers came into being under the above Act. It is now mandatory for a safety policy to be drawn up and displayed in all places where five or more people are employed. So a good general rule concerning health and safety matters is this: if in doubt, contact the Health and Safety Executive and ask their advice.

The basic salary and shift allowance paid to operations staff has always been a matter of contention. It is a rather com-

plicated issue, too. It depends, to a considerable extent, on how and where the operations jobs fit into the company's grading structure. Of course, many other factors come into play, including:

The equipment used. For instance, IBM operators, generally speaking, tend to earn more than their ICL counterparts.

Where the site is situated. For instance, operators in the capital will receive a London weighting allowance because the cost of living there is higher than in other parts of the country.

Read the computing magazines to keep in touch with the operator market and be alert to any opportunities that might crop up. And if you decide to make a move, ensure that you secure a position worthy of your experience.

This brings us to the question about unions. But first let's consider the concept of an operators' union, as many operators have contacted me about this subject in the past.

Here are some of the areas in which such a body might effect an improvement:

We have already dealt with health and safety matters. And an operators' union, or call it what you will, would do much to ensure that operators are better informed and that measures are taken to establish and maintain sufficiently high standards.

At some sites hardware — sometimes even software — enhancements are carried out

without consulting the operators, who first learn of the new printers or disc drives when the units actually arrive in the computer room and they are expected to operate them.

This is a ridiculous state of affairs. Operators should be informed of any plans to enhance or modify the system, and they should be paid salary increments, accordingly. Too many installations take liberties in this regard and an operators' union might help to rectify the situation.

It might also help to ensure that promotions take place from within the operations department.

Read the computing magazines to keep in touch with the operator market and be alert to any opportunities that might crop up. And if you decide to make a move, ensure that you secure a position worthy of your experience.

LAST week in Op Spot we discussed the READER procedure, that part of the IBM OS operating system responsible for placing work on the system input queues.

Now I would like to consider the IBM OS WRITER procedure which takes data from the system output queues and transfers it to the system output devices.

IBM OS supports 36 output queues, or classes, and each WRITER will handle a maximum of eight of them. The OS command to start the WRITER has the following format:

S Prcname, Identifier, Unit Number, Output Classes

The IDENTIFIER parameter is optional and, in my experience, seldom included. To start a WTR procedure called WTR to printer 020 and serving output classes P, Q, R, I, 2 and 3, the following command is used:

S WTR,020,pqr12

But under certain circumstances, an IDENTIFIER might be included to good effect. For example, if the site runs several printers at a time it is necessary to know the output classes each of them is serving. The command used is as follows:

S WTR,020PQR12,020,pqr12

Then, by entering the OS DISPLAY command, any of the operators will be able to find out what each of the units is being used for. Thus the master console operator is able to find out

certain information by means of the operating system, instead of contacting the operator directly, the output, or unit record files.

Alternatively, the IDENTIFIER might be defined as the name of the person tending the unit. For example, if an operator called Mike is to be responsible for unit 022, the following command might be used to start the procedure:

S WTR, Mike,022,AXY21

The WRITER procedure is also responsible for punched output. In this case, it is called WTRB, as class "B" is the accepted norm for punched output under IBM OS.

By Bernard Allen

HINT OF THE WEEK Don't treat chad like confetti

PUNCH card chips, sometimes called chad, can be a health hazard. Yes, the tiny, oblong bits of card which accumulate in the bins of punch card decks should be treated with respect. If they are inhaled or get into the eye, they are a source of great discomfort and can cause damage, sometimes permanently. So when disposing the waste from both online and offline punch card units, be careful.

I can recall several instances of the chips being used in a practical joke, such as when a fellow operator's boots and jacket pockets were filled with them. And no harm was done. But remember, the chips are hazardous and don't treat them like confetti.

London schools to get 30 micros

COMPUTING facilities for London schools and colleges are to be given a hefty boost by the purchase by the Inner London Education Authority of about thirty 3802 microcomputer systems from Research Machines of Oxford. But effective use of them will be seriously held up by lack of trained teachers and appropriate software and teaching aids.

Derek Esterson, ILEA inspector for computing, said that £85,000 of the authority's central funds have been allocated to buy about 20 larger, disc-based sys-

tems with colour graphics, and 10 or 12 smaller systems into which it would be possible to plug more equipment later on.

Schools wanting a machine to themselves will have to make a contribution towards the cost of about £1,200 for a larger system and £500 for a smaller. Colleges will not have to make a contribution. Some machines will be centrally based and mobile.

The Secretary of the Society of Microcomputer Users in Secondary Education, MUSE, Charles Sweeten, while applauding ILEA's decision to buy all this

equipment, said there was a serious danger that the money would be wasted if there was not adequate central support.

There was a shortage everywhere, he said, of teachers with direct experience of these machines who really knew what to do with them, and the amount of software for use in the classroom was very limited.

It was difficult, Sweeten said, to get across the idea that the computer is a tool and not just for playing games. He pointed to the experience of Humberside schools, where there was a computer library of 500 programs, and for a time 60% of the usage of these was solely on one for playing Star Trek.

With the growth of home equipment such as educational calculators from Texas Instruments, Sweeten said, schools might well fall behind parents in providing facilities for children.

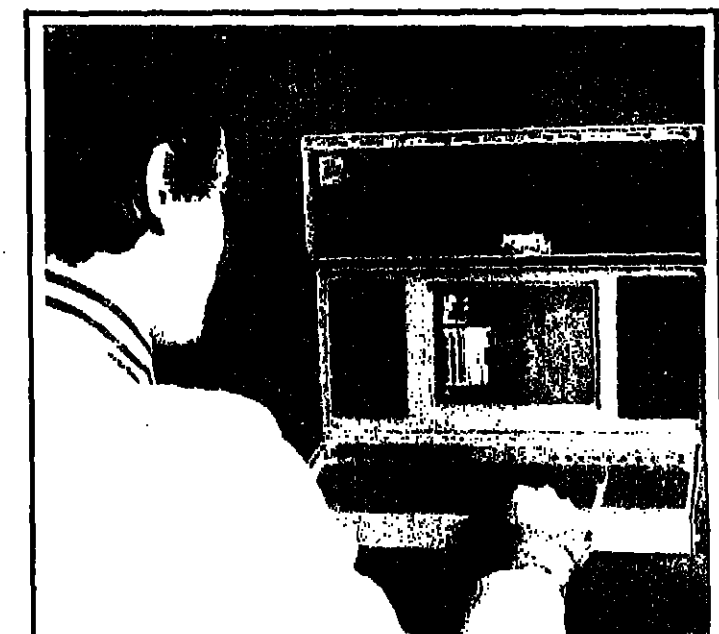
MUSE held a meeting in London last November, and was disappointed at how few ILEA teachers came. "The Midlands, Liverpool, and the North East are where things are happening in this field," said Sweeten.

Esterson agreed that ILEA was desperately short of experienced people, and would continue to be for a long time. The new equipment should help to motivate teachers to learn about the subject at home, and this would help to solve the problem, he said.

There was also a "huge gap" in the availability of teaching materials, he said, which must be tackled by central government. "The DES is dragging its heels on this."

There is some, but far too little, computer training in colleges of education, Esterson added: in-service training is only a short-term solution. He explained that spending money on hardware was not taking funds away from training programmes, because of the way local government manages its finances in separate compartments.

It was always easier to get money for capital expenditure than for people, he said.



New micro range from TEI

A RECENTLY introduced range of microcomputer systems from Houston-based Texas Electronics Instruments is now being distributed worldwide by Abacus Computers, a newly formed microcomputer company set up by ex-Commodore man Derek Rowe.

All the products in the TEI range feature a 32K by 8 CPU that is expandable up to 64K, 2K bytes of PROM, three parallel and three serial ports, and a floppy disc controller allowing a mixture of large and small disc drives. Starting prices for the range are

around £4,000. The systems are fully compatible with the CP/M operating system and its range of utility programs, and are capable of running software written in Cobol, Fortran, Super Basic, Pascal, RPG II and APL.

Abacus has also been appointed to the Department of Industry's Mapcon list of approved microcomputer consultants.

Our picture shows the TEI PT 408 microcomputer incorporating 32K RAM.

Prime enters 32-bit minicomputer business with four new machines

THE latest entrant to the 32-bit minicomputer business is Prime, which has weighed in with four machines, the 450, 550, 650 and 750. According to Prime they are 100% software compatible with the existing 16-bit Prime computers and run the existing Prime operating system.

Prime says that existing 16-bit machines can be upgraded to the new 32-bit computers and that some of the differences include a new pre-fetch feature and a bigger instruction set. The 750 comes with a 16K byte cache

memory while each of the other 32-bit machines has 2K.

On the software side, facilities introduced by Prime for use with the 32-bit machines include X25 support in the Primeret communications package.

Also new are PL/I and Fortran 77 compilers and an interactive data management facility called Prime/Power.

The top end machine, the 750, is about two-and-a-half times more powerful than the 500, existing top end machine in the 16-bit Prime range.

The 450 differs radically from the other three new machines in that it will be offered purely on an OEM basis to systems houses and its price will be kept very low by supplying it in standard configurations and with no program compilation facilities.

The 450, 550 and 650 can have up to one, two and four Megabytes of MDS memory, respectively, while the memory on the 750 can be expanded up to a maximum of eight Megabytes.

MP pressure on Immos

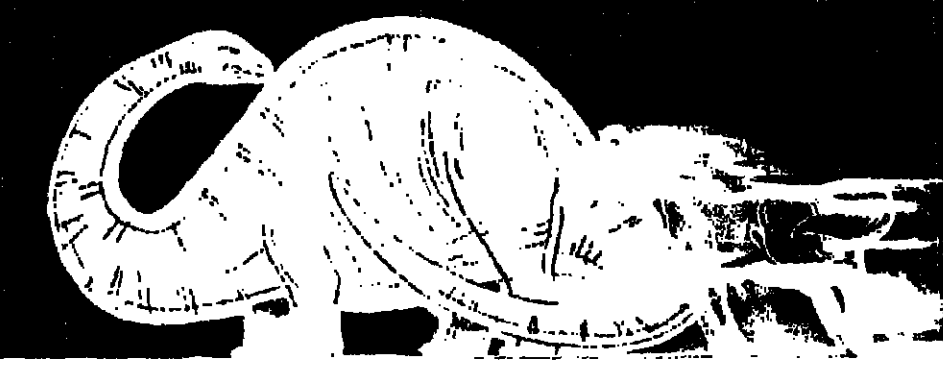
A PLEA by Iann Barron, strategic director of Immos, to be left free of political pressures, seems likely to fall on deaf ears.

A group of Greater Manchester MPs are threatening not to vote for the government's Bill allocating more funds for the NEB unless it assumes greater control over the location of investments.

They are furious that the Immos Technology Centre has gone to Bristol rather than the Manchester area, claiming that senior executives want to live in the Cotswolds.

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NOW that the actual capabilities of microprocessors and microcomputers have stopped being the "mind-boggling" wonders that some of the national press continue to see, many interested people have started to move their attention away from the devices themselves, and on to the more important question of easily interconnecting the beasts to the outside world.

The problem of microcomputer buses, their variety and usefulness, is liable to be one of the most important topics for microcomputer users and designers during 1979.

The article by Dr Richard Stevens on the S-100 bus structure (CW November 23, 1978), has already stirred up a small hornets nest of controversy that has been reported on this page before, but it continues unabated.

The S-100 bus, by virtue of its widespread use amongst many microcomputer manufacturers, has become something of a "de facto" standard for a small systems bus structure. Its biggest failing, however, according to its detractors, is that while commonly used, it is not "in fact" standardised.

For example, a recent letter from Anthony Aylward of Gillingham, written in response to Dr Stevens' article, starts by making this very point, and goes on to list other failings of the bus

that, he feels reflect badly against the rapidly developing field of microcomputing.

"The original S-100 configuration was never intended for growth," he writes, "or with any consideration for what the future of microprocessors might hold."

He quotes as an example that fact that, having been originally designed for the Intel 8008, and "mutilated" for the 8080 and Z80, it cannot support Motorola's 6800 family.

Adding, as Aylward puts it, insult to injury, Dr Stevens omitted to mention a UK designed bus structure known as E78.

According to Aylward, "this has been designed as a forward looking bus that allows the full capabilities of the new generation of 16-bit machines to be fully and easily realised without precluding the use of the smaller and slower 8-bit machines."

"It is a fully processor independent bus that has been structured to allow commonality of data structures between 8 and 16 bit machines."

Such a facility is not available to S-100 bus users, he states, while it allows the upgrading and development of E78 based systems.

"The E78 does indeed seem to fulfil its claims of being 'the bus for all micros, the bus for the future.' Having seen the sheer

simplicity of interfaces for it, from things as humble as the National Semiconductor SC/MP through the immensely popular Nascom 1 to an interface to the DEC Unibus, I feel that E78 does for microcomputer hardware what structured programming does for software."

Aylward goes on to point out that the E78 bus has one additional advantage which could be very endearing to microcomputer manufacturers. Writes, a board designed for one system will find no market outside that system. As an example, he quotes the Tandy and Nascom 1 systems, which both use the Z80 CPU chip, yet support devices and expansion boards are in no way interchangeable or related.

Users, therefore, can become trapped into a closed market. But this is not just one way, he suggests.

Manufacturers can end up with a limited market for their products and, if they wish to go beyond this, are obliged to design and produce an additional circuit board to perform the function.

With the E78 bus however, he claims that this is not necessary. "Any microprocessor can be interfaced to E78 with very little trouble, as can any support chip. Other systems can also be believed to E78 (in fact from reading the

specification it would seem that anything with a bus structure and a data bandwidth of less than about 6 Mbytes/second could be interfaced with E78).

Dr Stevens' article also prompted M. R. Barclay, marketing manager of Calcomp's Micro Division, to point out that Calcomp's Model 2850 S100 bus controller can run up to 10 Mbytes from a single S100 board.

User group launched

A USERS' group for microprocessor development systems has been formed to attempt to keep users up to date with new Intel products and provide a platform for software and hardware discussions.

Membership of the group is free, and loosely structured. Those organisations or individuals who own microprocessors or Series 11 development kits are eligible for membership.

Entirely independent of Intel, the group is based in Bedford, and can be contacted by writing to 28, Church Lane, Bedford.

Management changes at IBM General Business

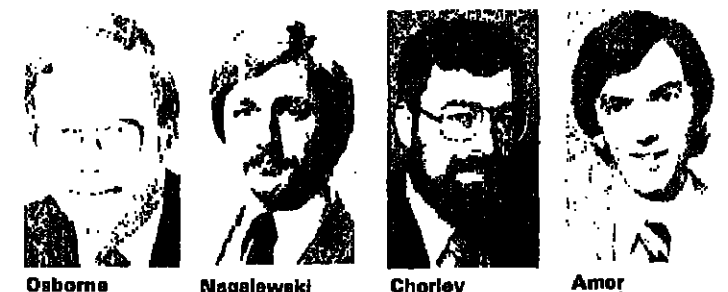
SENIOR management changes have been announced in the General Business division of IBM United Kingdom. Kenneth Woodward has been appointed assistant to Frank Cumiskey, president of the General Business Group International in White Plains, New York. He was until recently general systems director, and prior to that General

Business Group management services director. Promoted to the position of General Systems divisional manager is Terence Osborne, formerly General Systems sales manager, and before that administrative assistant to IBM chairman Frank Cary in New York.

Memorex promotions

Ed Picken has been promoted to the position of UK computer media sales manager with Memorex UK. He was previously computer media sales manager for the Midlands. He replaces Andy Blyth, who has become computer media programme manager with Memorex European operations. Nigel Chorley has joined the company as media technology support engineer for Control Data, where he was QA engineering manager. Two new equipment sales executives have been appointed for the South and West branch of

Memorex UK. They are Jeremy Smith and David Smith. Smith was formerly a salesman with Univac, and Minns a salesman with Control Data. John Staples has joined the London and East district as a sales manager responsible for sales of large systems plug-compatible peripherals. He was formerly large accounts manager with IBM. Until recently a UK sales engineer with Data Recording Instrument Company, Mike Charter has joined Memorex as a salesman for peripheral equipment for the IBM System 3.



George Nagalski has become managing director of The Marketing Results People, a sister company to Court-Mind. He was formerly sales manager with Xerox.

Paul Webster has been appointed deputy director controls and secretary of the Electronic Engineering Association. He succeeds Tony Marshall who is retiring after 20 years.

John Wright, UK managing director of SEL Computers, has been appointed director of European operations to co-ordinate the activities of European subsidiaries in France, Germany, Italy, Scandinavia, United Kingdom and Benelux countries. SEL has also announced the move of its UK Operations to new offices in Sutton, Surrey.

DIARY

- JANUARY 21**
Rural and underwater medical electronics colloquium IEE/IEE, Royal Institution, Albert Street, London W1 4 0R. Regat 01 240 1871 ext 282.
- JANUARY 21**
Control of large-scale systems, colloquium IEE, Savoy Place, London WC2, 14 00.
- JANUARY 21**
Vehicle routing: exact algorithms, heuristic, and their practical evaluation. BCS mathematical programming group, LSE, Houghton Street, London WC2, 18 30.
- JANUARY 25**
Electronic news gathering, IEE, Savoy Place, London WC2, 14 00. By ticket only from the Secretary, 01-240 1871, ref 141.
- JANUARY 25**
Microprocessors, research and its relation to manufacture, IEE, Imperial College, London SW7, 18 00.
- JANUARY 25**
Microprocessors in instrumentation, Dr D. E. Ewer, IEE, University Engineering Labs, Trumpington Street, Cambridge, 18 00.
- JANUARY 25**
Presidential address, Prof Frank Sumner, BCS Coventry branch, Lanchester Polytechnic, Coventry, 18 30.
- JANUARY 25**
Where a data dictionary fits into data management, E. W. Haggell, BCS Leeds branch, Parkway Hotel, Leeds, 6 30.
- JANUARY 25**
Film evening and social, BCS South West branch, Royal Naval Engineering College, Plymouth, 18 00.
- JANUARY 25-26**
Meeting, IBM CUA Programming group, Muston Hotel, London, 14 00.
- JANUARY 28**
Visit to Westford/Widham, Sharnford, BCS Bedfordshire branch. Apply to W. Chiswell, Ampthill 403431 ext 48.
- JANUARY 28**
A structured software design method, J. P. Wankowicz, BCS Newcastle branch, Barras Bridge Buildings, Newcastle University, Newcastle, 19 00.
- JANUARY 31**
Data production legislation, T. R. H. Sizer, BCS Edinburgh branch, Heriot Watt University, Edinburgh, 17 30.
- FEBRUARY 1**
Microprocessors in automotive applications, Dr S. Microprocessor specialist group, Polytechnic of Central London, 300 Regent Street, London W1, 14 00.
- FEBRUARY 1**
Presidential address, Prof Frank Sumner, BCS Merseyside branch, Computer Lab, Liverpool University, Liverpool, 18 00.
- FEBRUARY 1**
Developments in medical computing, Dr B. Barber, BCS East Anglia branch, Addenbrookes Hospital, Hills Road, Cambridge, 19 00.
- FEBRUARY 6**
Advanced memory devices, D. Barrett, BCS N. W. London branch, Railway Hotel, Greenford, 18 30.
- FEBRUARY 6**
Computer operations, J. Haynes, BCS Birmingham branch, Priory Dene Hotel, Edgbaston, 18 30.
- FEBRUARY 7**
AGM, Distributed computing, BCS Data Communications Group, Chemistry Lecture Theatre, Birkbeck College, London WC1, 10 30.
- FEBRUARY 7**
Interfacing software, Study Group on Computers in Survey Analysis, City University, London. Details from John Utting, National Children's Bureau, 8 Wakeley Street, London EC1V 7QE.
- FEBRUARY 7**
Distributed computing - discussion and AGM, BCS Data Communications Group, Chemistry Lecture Theatre, Birkbeck College, Malet Street, London WC1, 10 30.
- FEBRUARY 7**
Word processing - practical techniques, N. Barclay, BCS Kingston-on-Thames branch, Regional Management Centre, New Malden, 18 30.
- FEBRUARY 7**
Of interest to IBM, Dr S. Gill, BCS Hammersmith branch, Witley Manor Hotel, Witley, 18 30.
- FEBRUARY 8**
The CAD of software, IMechE, Computing techniques section, Institute of Mechanical Engineers, 1 Blinque Walk, London SW1H 1JL, 14 30.
- FEBRUARY 8**
Computing in education or education in computing, BCS Kent branch, St George Hotel, New Road Avenue, Chatham, 19 45.
- FEBRUARY 8**
The benefits which electronic fund transfer provides to bank customers, J. Pyne, R. Hope-Smith, BCS South Essex branch, West Cliff Hotel, Westcliff Parade, Westcliff-on-Sea, 19 45.
- FEBRUARY 8**
Privacy and security in data processing, R. R. Tozer, BCS Staffordshire branch, The Crown Hotel, High Street, Stone, 20 00.
- FEBRUARY 8**
Visit to Culham laboratory, BCS Oxford branch, Oxford, 19 45.
- FEBRUARY 12**
Systems thinking, Brian O'Heron, BCS, Reading branch, ICL, Lovelace Road, Bracknell, 20 00.
- FEBRUARY 12**
Computers in X-ray scanning, a breakthrough in diagnostic medicine, B. J. Wainman, BCS Croydon branch, Fairfield Hall, Croydon, 19 15.
- FEBRUARY 12-14**
Computer-aided design of printed circuit boards, K. Bennett, BCS Harlow sub-branch, Harlow Technical College, Harlow, 19 30.
- FEBRUARY 13-14**
Practical application of artificial intelligence, Infotech, Regent Centre Hotel, London, Tel 0628 35031.
- FEBRUARY 14**
AGM, VMEX subgroup, 2800 User Group, Details: Dr Spruit (0277) 68822, ext 827.
- FEBRUARY 18**
Public policy for interelectronics, Nigel Kingsley, BCS London branch, Waldorf Hotel, London WC2, 18 00.
- FEBRUARY 18**
Microcomputers, the electronic accountant, Richard Waller, BCS Coventry branch, ICA, Venue to be announced, 19 30.



HONEYWELL entertained a group of six former students of the data centre at Hemel Hempstead. The boys from Haberdashers' Aske's (Honeywell's promotions manager (extreme left of our school, Elstree, were shown several Level 5 minicomputer systems and also operated one of the Level 5 models in the data centre at Hemel Hempstead. The boys from Haberdashers' Aske's (Honeywell's promotions manager (extreme left of our school, Elstree, were shown several Level 5 minicom-

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New marketing director for Plessey

PLESSEY has appointed a new director of marketing for its Avionics and Communications division. He is Jim Conolly, formerly commercial manager for Slesmair, a company in Brazil. In his new position he will be based at the company's Ilford headquarters and will report to Alan Cornack, managing director of Plessey Avionics and Communications.

Call for papers

PAPERS are invited for the fourth bi-annual conference on Software Engineering, to take place on September 17-19, 1979, in Munich, Germany. The conference will bring together researchers and practitioners to discuss the state of software engineering and to further progress, and is sponsored by the IEEE Computer Society, the European Research Office, the Association for Computer Machinery, and The Code Society for Informatics. Leading papers are February 1, 1979, to the programme Chairman, Professor M. A. Lohman, Imperial College - CDD, 17, Queen's Gate, London SW7 2BZ.

PoS range from Systime

A FAMILY of point-of-sale terminals has been introduced by Systime. Called Micro-PoS, the terminals can operate either in stand-alone mode or online to a Systime computer via a standard V24 interface.

Each Micro-PoS terminal is based around an Intel 8080 microprocessor and includes a keyboard with 12 function keys, an integral cash drawer, an alphanumeric receipt/audit roll printer, an 8-digit LED display and a punched badge reader. The terminal can generate 18 individual prompts for the operator.

Options include a magnetic stripe badge reader, a bar code reader with a wand, a hand-held OCR reader and a cassette unit for the stand-alone version. The cassette can also be used as a standby with an online model. Micro-PoS prices range from £2,600 to £5,000.

According to Systime the emphasis will be on using the terminals as part of an integrated stock control and transaction accounting system.

Honeywell Controls puts £1m into Scottish plant



Managing director Jim McGregor... "Just a beginning for Newhouse."

A £1 MILLION investment, backed by a further £250,000 from the Scottish Development Authority, is to be made by Honeywell Control Systems in its Newhouse, Scotland, factory. The money will be used to establish a new production line to manufacture advanced process control equipment, including the TDC2000 range, and a new microprocessor based system, called DCP7700.

First products from the new line are scheduled to appear in November, and the investment will result in the creation of 125 new jobs, including 80 new high technology occupations. Most of the investment will go to the introduction of advanced component handling facilities, computer-controlled component distribution systems and test and diagnostic facilities.

The money from the Scottish Development Authority, Honeywell's landlords in Newhouse, will go to renovating the factory building, though no

will come out of it, as just a beginning for Newhouse. "Some R and D effort has already been put in at Newhouse," he said, "and this will be expanded. There will be new products using advanced digital technology coming out of Newhouse in the future."

The new DCP7700 digital control programmer has been available in America since September. Based on an Intel 8-bit microprocessor, with some 16K bytes of memory, it provides what Honeywell describes as "previously impossible levels of

power and flexibility." It combines a variable set-point versus time programmer with a three-mode controller to provide an accurate, flexible and compact control system. Up to nine separate programs, consisting of up to 200 functions, including temperature ramps and tanks, and event switches, can be stored in the system. Programming is by a keypad for both data and operating commands, with read-out from LED digital displays. Program storage is in non-volatile memory.

Perkin-Elmer offers Series Sixteen family of low-cost hardware packs

AIMING for a bigger slice of the commercial systems market, Perkin-Elmer Data Systems has introduced a family of low-cost

hardware packages, the Series Sixteen, which the company is offering on an OEM basis to systems houses.

Series Sixteen is based on a group of four new 16-bit machines from the Interdata division of Perkin-Elmer, each of which employs MOS memory instead of the core provided with the existing Interdata minicomputers.

The new machines are software compatible with the existing 16-bit Interdata minis, and Perkin-Elmer has enhanced its OS-16 operating system with a feature called Resource Sharing, RS, which can support up to 16 terminal users and which extends the program development capacity of OS-16. RS also provides batch processing facilities.

Fortran IV and Basic are already available for use with Series Sixteen, and Perkin-Elmer is currently developing a version of Cobol for the systems.

Perkin-Elmer points out that the Series Sixteen systems are not being offered purely for commercial applications, but that they are intended to increase the proportion of its business in the commercial systems market.

The four systems in the series are the 1615, 1624, 1625 and 1635. The 1615 in its basic form comes with a 32K byte memory, a VDU, a printer and the OS-16 software, and costs £7,730, while the basic 1635 includes a 128K byte memory, 10 Megabytes on disc and a VDU and matrix printer for £20,360.

The 1635 processor is much more powerful than the most powerful existing 16-bit Interdata machine, the 8/16E. Disc storage can be expanded to 300 Megabytes.

NEWS IN BRIEF

Association for women

WOMEN computer professionals in the UK have formed an Association for Women in Computing to exchange ideas about their jobs and promote their career development.

The secretary, Anita Cochran, of Bell Laboratories, says their aims are to form a women's communication network so that they can "get to know the right people" to promote technical education for women, and to encourage women to follow technical careers.

For emergencies

UNDER a one-year pilot scheme, selected fire brigades in the UK will be able to get emergency information on over 10,000 chemicals and chemical manufacturers in the event of an accident via Hazchem, a chemical database available on a 24-hour basis from BCC Data-solve on its time-sharing service.

NCR for artists

RIPLVES, manufacturer of artists' materials, has installed an NCR 5250 system to handle its order processing, stock control and sales ledger applications. The system includes a 128K processor, four VDUs, 20 Mbytes of disc storage and a printer.

Robots seminar

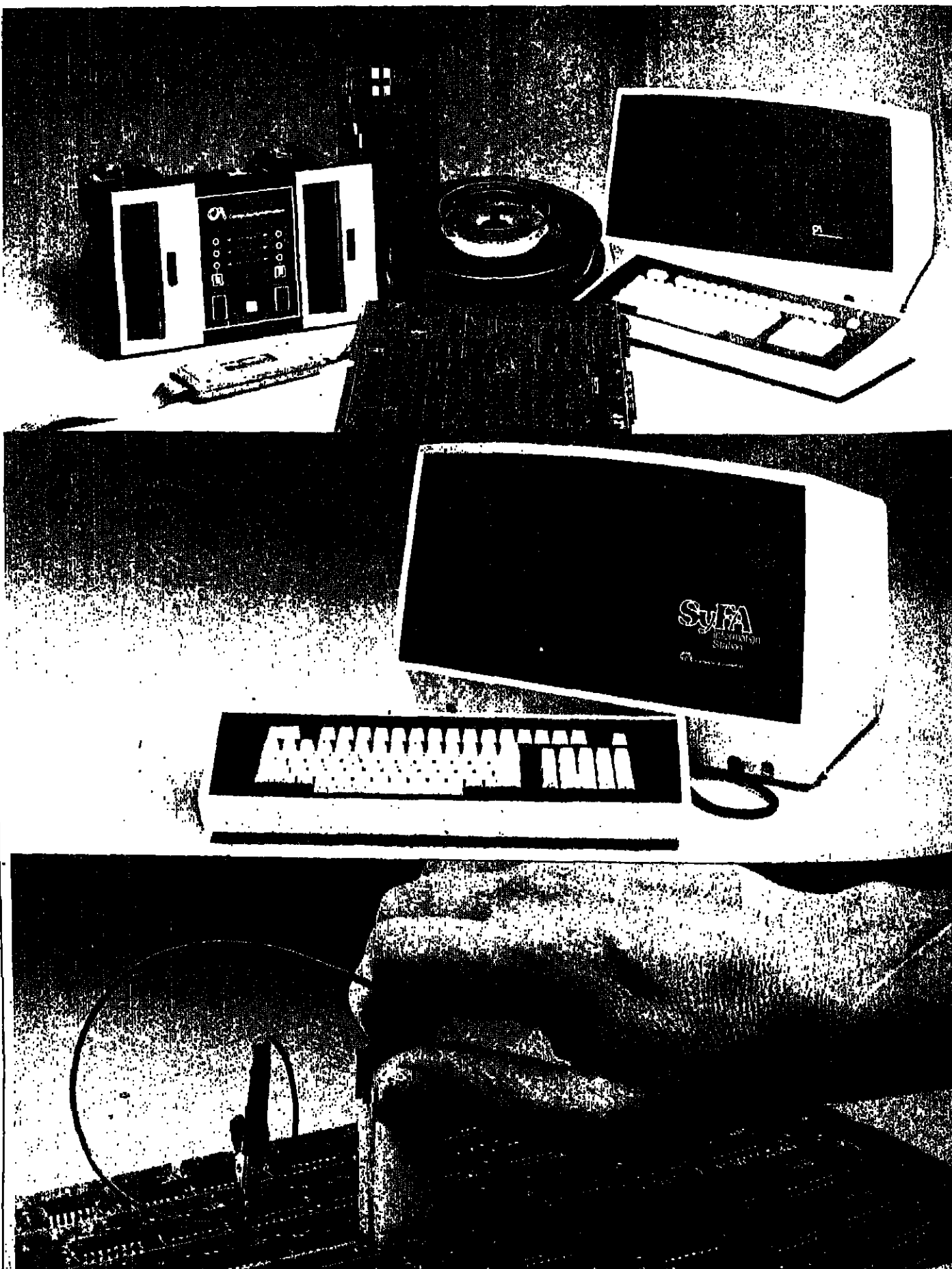
THE four-day conference on industrial robots (CW, January 4), is to be held at Nottingham University. It will bring together experts in robotics to give talks on applications, new equipment, research and development trends, and the social and economic aspects and governmental involvement in robotics. There will be a large display of industrial robots and the event, organised by the British Robot Association, Bedford, will take place between March 27 and 30.

DG on the move

TO meet the growing business in the City of London, Data General has moved to larger offices at Irwin House (4th floor), 118 Southwark Street, London SE1 0SW. Tel: 01-633 9544.

Expanding

TO provide more space for expanding business Langton Information Systems has moved to 133 Oxford Street, London W1R 1TD. Tel: 01-439 0366.



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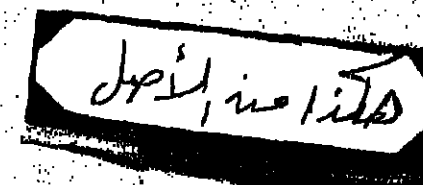
Three product ranges at the forefront of technology. With a logical link. The CAPABLE testers were first developed in-house to ensure the quality and reliability of our own Naked Minis. A standard of performance that our customers could rely on. And we're so convinced, that all SyFA systems are built around the speed and

flexibility of Naked Minis. All backed by comprehensive technical support facilities throughout Europe.

In only ten years we've grown to the point where we are now the third largest computer manufacturer in the world, in terms of units shipped. The secret? We only develop products that lead. Then we keep improving them.

We've got enough confidence in all our three product ranges that we would like to issue an open invitation. Come and see them. Subject them to your own benchmarking tests.

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by Don

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We offer a range of HP 1000s to match different jobs around your lab and factory. From the economical M-Series, with a 650 ns cycle time, through the fast E-Series, to the powerful 350 ns F-Series, with floating point processor.

They're fully compatible, so you can use the same programs and operating systems if you move up to another model or when you switch a computer to another task. You can expand them all to 2MB of main memory at the extremely low price of 2 pence a byte.*

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RORY JOHNSTON ON FREEDOM OF INFORMATION

Freud's Official Information Bill a landmark

ALL government records, including computer files, will have to be accessible to the public if Clement Freud's Freedom of Information Bill, due to have its second reading on January 18, is passed into law. Every government department, and the National Health Service, will have to produce complete indexes and guides for the use of members of the public to enable them to obtain any document they wish, subject to certain restrictions as to defence, foreign relations, and law enforcement.

The chances that the Official Information Bill, as it is called, will actually be passed into law in its entirety are slim, owing to tacit opposition from the government and dissension in the ranks of the Bill's supporters (CW, January 4) but in any event the Bill is a landmark in the efforts of backbench MPs to exert more control over the Civil Service. Its supporters come from all parties, and in addition to Clement Freud they include David Steel and Richard Wainwright (Liberal), Hugh Fraser and Jonathan Aitken (Conservative), Jeff Rooker (Labour), Margaret Bain (Scotts Nat) and William Craig (United Ulster Unionist).

The bill was drawn up by the Outer Circle Policy Unit, an independent group that studies public policy and which is funded by Rowntrees. In its present form the Bill does three separate things.

First, it repeals the controversial Section 2 of the Official Secrets Act 1911, which is the blanket prohibition of the unauthorised disclosure of any government information and which has led to several widely-publicised secrets trials.

Second, the Bill establishes the right of access by every person to official documents, subject to various exceptions which it lists. Rules are imposed on government departments saying how they must assist members of the public in this.

Third, the Bill fills in for the repealed Section 2 by establishing some criminal offences for the unauthorised disclosure of information relating to defence, security, intelligence and "identifiable individuals", and any information likely to impede the prevention or detection of crime.

The classes of documents that are exempted from disclosure are these: those concerning defence, security, or foreign relations (but not including the Common Market); those whose disclosure is pro-

hibited by any other Act of Parliament; those concerning law enforcement whose disclosure would be helpful in committing crimes or would impede the prevention or detection of crime; those to do with an identifiable individual (other than the person applying, so one can ask to see documents about oneself); and Cabinet papers, up to five years after they were written.

Barring these, a photocopy of any government document must be supplied to anyone who asks for one. The Bill states specifically that if a written document could be produced from a computer, and that is what the applicant wants, that must also be provided. There is however a proviso that if complying with a request would "interfere unreasonably" with the business of a department, "having regard to any difficulty that would exist in identifying, locating or collating documents containing relevant information within the filing system," then the request can be refused. There will clearly be plenty of disagreement over what is or is not unreasonable interference.

A department receiving a request must reply within 20 days, either with the copy or

with an explanation of a refusal, also, outlining the applicant's right to appeal direct to the Ombudsman (with no MP's intervention necessary).

Disclosure of documents to do with the "formulation of policy" can be deferred until some "particular event" or administrative action, "when it is reasonable to do so in the public interest", another vague provision. Papers containing only factual information, and scientific and technical reports, cannot be so deferred.

Every government department is required to publish a Code of Guidance providing all the information people will need to obtain access to documents. This will include a guide to the cataloguing and indexes in the department. Clearly many indexes will have to be reconstructed to make them understandable by lay people. Departments will be allowed to charge small fees for the making of copies.

For comment on the issues involved in the Freedom of Information debate, see CW, January 19, August 24 and September 7, 1978.

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COMPUTER WEEKLY, January 18, 1979

Kit for information systems planning

INFORMATION systems planning, implementation and management can be aided and supported by a kit now available from the management consultancy SIMPACT. Called PROMPT II, the kit is the latest development of Simpack's PROMPT, Project Resource Organisation Manpower and Planning Techniques, system.

Set up in 1975, Simpack has just moved into a new headquarters at Sheffield, near Southampton, a large Jacobean-style mansion that will accommodate Simpack's training courses, the other side of the firm's business. The courses cover topics like technical standards, information systems network planning, organising project teams and most aspects of structured programming.

The PROMPT II kit comes in the form of a set of ring-back

manuals providing management standards, checklists and models to guide its user through a predefined sequence of steps towards a fully documented and operational information system.

PROMPT II is designed for projects of between nine months and two years' duration, and is divided into six stages: justification, specification, design, development, installation and operation. A smaller version called Mini-PROMPT II is available for projects lasting nine months and is similarly structured. PROMPT II and Mini-PROMPT II cost £4,000 and £8,000 respectively.

The kits are now also being sold in North and South America and Israel by Auerbach Simpack Inc, a firm set up jointly by Simpack and the Auerbach group of Penzance, New Jersey.

Batch comms on Qantel

BATCH communications facilities for IBM and ICL computers are now available with the Qantel range of small business computers introduced to the UK market by General Computer Systems (CW, January 11).

IBM users are offered a System 3 IASP multi-leaving terminal emulator that requires a 16K partition in a Qantel system and also an IBM 2780 emulator that runs in an 8K partition. In addition, Qantel now has a 3780 emulator and is developing a communications controller that will be able to carry out Synchronous Data Link Control, SDLC, and High-Level Data Link Control, HDLC.

GCS in the UK can provide a 7020 batch terminal emulator on

Qantel systems for ICL 1900 users and will soon be able to offer 7502 batch mode emulators. Facilities for communication with a 2900, GCS has provided these facilities for some time on its 2100 series of key-to-disc systems.

Within the next year Qantel will introduce a special interactive terminal for use with the Qantel systems that will be able to emulate the IBM 3270 and 3701.

GCS itself is selling the Qantel systems to big computer users in the UK but the small machines, particularly the 2100 floppy disc based system, will be sold to first-time users by sub-distributors appointed by GCS. The first such distributor is Vebury Ltd, of Esher, Surrey.

Meet MINC-11, the new Research Assistant from the Digital family.

You can start using your MINC just like a calculator, on a wide range of computational and real time data acquisition problems. But if it's when you start using MINC as a computer that data really starts to move.

Like a good research assistant, MINC can help you at every stage of your work. Solve simultaneous equations, execute Fast Fourier Transforms, invert matrices, sample analogue voltage, sense switch closures, control instrumentation, or time events.

Using concise, easily-learned MINC BASIC commands, you can write programs to control data processing, or to display results as bar charts, histograms and strip charts on the MINC graphics terminal.

MINC BASIC makes it equally easy to manipulate files on the 1 million-character floppy disk storage, control instruments - X-Y plotters, frequency synthesizers, DVMs on the standard IEEE-488 instrument bus, or to acquire data on seven optional input/output modules.

Using these reliable high-performance plug-in modules, you can sample from 64 sources of voltage, generate control voltages, connect to TTL-compatible equipment, sense switches, drive lamps and relays. You can also resolve down into microvolts.

The only tool you'll ever need is a screwdriver, and MINC, on its mobile trolley, is equally at home in office, classroom and laboratory.

Working with MINC, even if you've never handled a computer before, is a rewarding and enriching experience. You gain new confidence and ability at each step.

Unlike calculators, MINC is an assistant with genuine depth of character that you can explore and expand as you extend your experience. Its heart is an LSI-11 microcomputer with



Computer performance and flexibility - at calculator prices.

60K bytes of memory, giving you the power to run many of the programs already written for the 70,000 other POP-11 computers of the Digital family.

(DECUS is the world's largest computer users society, with a library of over 2,000 programs, all contributed by Digital users.)

MINC can run Digital's proven RT-11 Foreground/Background operating system - the lets you run BATCH processing, FORTRAN, MACRO-ASSEMBLER and many other Digital software products. MINC is O-BUS compatible, allowing you to expand through an extensive range of available peripherals.

So, if you're looking for something that costs about the same price as a calculator system, but performs a whole lot better - look MINC. It's the ideal research assistant. Never sleeps on the job, grows constantly in ability, and never resigns to get more money somewhere else. To get full documentation on MINC-11, please send the coupon.

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My previous computer experience is _____
Name _____
Address _____
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Tel. _____
Send me full documentation on MINC-11, please send the coupon.

digital

Digital Equipment Co. Limited

*Price correct at time of going to press.



Systime acquires MBM

ONE of the biggest minicomputer system suppliers in the country has been formed by Systime's acquisition of Northampton-based Midland Business Machines. Both firms specialise in systems configured around Digital Equipment computers.

Systime is by far the bigger of the two firms, with a staff of 480 and about 400 systems installed. Its turnover in its 1977/78 financial year was £9.1 million (CW, December 21/28, 1978). MBM will increase Systime's head count by 120 and add about 100 machines to Systime's customer base.

The Northampton firm chalked up a turnover of £2.7 million last year and Systime is forecasting that the turnover of the combined operation will approach £20 million in 1978/79.

Unlike Systime, which boasts a high percentage of the kit that it sells, MBM has always bought in most of its hardware. MBM has concentrated on software development and has produced a set of commercial software packages that it sells with its main product, the 7000, a system configured around the DEC PDP-11/34.

BL Cars orders 50 ICL 1500s

THE drive to increase the penetration of the ICL 1500 intelligent terminal in the packaged systems market is meeting with success, and the latest coup is a £750,000 contract from BL Cars for 50 1500s.

The machines are for use by Austin-Morris and Jaguar-Rover-Triumph dealers, and tailored software for accounting, vehicle and parts control, payroll and management reporting will be written by ICL Datskil.

The terminals will also be able to communicate with other BL Cars computer systems, and the BL Ltd division will recommend the 1500 system to all its 2,000 dealers.

'About-turn likely for distributed processing'

THE trend towards distributed processing is about to reverse direction. The rapid pace of technological development coupled with the equally rapid rise in the cost of staff is producing an economic environment in which many of the current arguments for decentralisation are becoming obsolete.

This is the view of Zenichi Fukuda, a computer systems engineering executive with Fujitsu in Tokyo. Fukuda has developed his thinking as a result of his experience in developing new systems for Fujitsu customers, and he presented a paper on the subject at the International Conference on Computer Communications in Kyoto, Japan.

The paper provides a sober analysis of the merits of centralised and distributed processing, and is in no way a polemical document. Throughout Fukuda is careful to relate his arguments to the needs of users.

If one were to criticise the document, it would be on the grounds that he fails to define his terms clearly enough. He says enough to establish his case that centralised computing is of greater importance than it is generally made out to be, but weakens his point by not distinguishing between distributed processing and distributed data entry and, on occasion, confusing the two.

The distributed processing philosophy, runs the argument, first gained strength during the period of worldwide low economic growth during the early seventies.

This intensified competition and so drove companies to find new, more sales-oriented forms of organisation in order to compete more effectively.

The result was a distribution of responsibility from the corporate centre, with the formation of product group divisions in heavy industry, and market group divisions in the office equipment industry.

But it was the smaller companies, tightly co-ordinated and vertically integrated, which took the lead in developing new markets. The conclusion

Patterns	1 2 3 4 5				
	Centralised		Distributed		
Item	Batch	RJE	Online	Batch	Online
End users' satisfaction	5	3	4	1	2
Realisation of system needs	5	3	1	4	2
Costs (computer plus line)	1	3	5	4	2
Number of computer staff	5	3	1	4	2
TOTAL RATING (without weighting factor)	5	3	2	4	1

Table 1.

Fukuda draws is that distribution of data entry and billing is helpful in improving marketing, but centralisation is still essential for control of sales and production.

Economic factors are now increasing the value of centralisation. The introduction of chip technology, leading to low-priced minis and micros, had spurred on the development of distributed processing, but now large-scale computers are themselves undergoing a period of dramatic price reductions.

Furthermore, the rapid and continuing rise in people costs, which started with the oil price increases, provides a strong argument in favour of the

economies of scale which can be realised by centralisation.

Fukuda quotes two examples of companies which converted from distributed processing to centralised processing. The first was a dye-works, which had previously had five divisional computer installations, each of which operated independently. There were two main reasons for the change.

The use of five separate computer departments involved a lot of expensive duplication; savings on hardware alone were estimated at \$40,000 a year after the change-over. Secondly, the company wished to change to

—FUJITSU EXECUTIVE

online working, and a system of the capacity and complexity required simply could not be supported divisionally.

The second company was in the oil business and had a network of small computers linked to a central medium-sized computer. The company was experiencing delays in processing, leading to lack of timeliness and out-of-date information. This was overcome by changing to a large central mainframe. A by-product was a reduction in the number of programs run from 1,000 to 400.

In conclusion, Fukuda summarises computer systems into five types; centralised batch, centralised batch with RJE, centralised online, distributed batch and distributed online. Rating these in order of merit according to a number of characteristics, he arrived at the position shown in Table 1.

This shows clearly that the operative question for planners of new computer systems relates, not to the merits of centralised versus distributed processing, but to the overwhelming superiority of online processing as against batch.

—NICHOLAS ENTICKNAP

Investment analysts predict a strong year for major mainframers

DESPITE expectations that America will experience a "mild recession," the computer and communications stock analysts at Drexel Burnham Lambert foresee a strong year for computer companies, particularly the major mainframe makers.

In a pair of reports describing the outlook for the computer, industry and the telephone industry, DBL's analysts, Harry Edelson and Susan Hirsch, state that "mainframe computer operations will not be hurt to

any great extent" but note that the telephone industry will not do as well, and that for such companies, including AT&T, "a slowdown is probably imminent."

The forecasts are based on an overall economic analysis by DBL brokers and on in-depth studies of the computer and telephone industries.

Edelson and Hirsch characterise the mainframe industry as being resilient in the face of recession because rental and

service revenues are high; because the manufacturers have full order books, as much as six to 10 months' production at current rates; because inflation often stimulates automation, and inflation is expected to continue at a relatively high rate; and because half the revenues of American mainframe makers come from abroad, where DBL expects demand to grow in 1979 over its 1978 rate.

Among the mainframers, IBM has the highest backlog, which the analysts put at 86% over last year's, and the highest proportion of its income from rental and service, 61%. Control Data, with a backlog that is now up by 28%, derives 51% of its income from rental and service. Burroughs, with a 18% increase in its order book, gets 44% of its income from rental and service.

However, the analysts point out, CDC gets more than half its income from business other than computers, mainly financing through its Commercial Credit group, and thus may actually be more vulnerable to a recession.

Similarly, Honeywell gets 62% of its income from the manufacture of controls and another 13% from defence contracts. Sperry Rand, parent of Univac, also has large non-computer operations, a farm equipment operation that brings it 32% of its income, and a hydraulics business that accounts for 15% of the profits.

USAF leases Scicon packages

IN a deal which will further enhance the worldwide reputation of Scicon in the field of mathematical programming, the United States Air Force is to lease the company's Sciconic and MGG mathematical programming packages.

Plessey pulls out of ICL

● From front page

growth but with the current government attitude, public money could also provide a possible source of investment.

On the office side Plessey has long been interested in a marriage between its own communications technology and ICL's computer technology, but exploration of the possibilities over several years led to the conclusion last year that there was no prospect of significant collaboration. Plessey therefore decided to sell the investment at a propitious time, and finally placed the shares with 125 City institutions at 415 pence a share, a discount of 28 pence on the ruling price.

Plessey chairman and chief executive Sir John Clark said this week that Plessey is thinking in terms of becoming an office systems house, buying in the elements of the automated office and configuring them into systems.

It already has a digital private telephone switching system, the Plessey PDN, built under licence from Rolm (CW, February 2, 1978). Orders for this already stand at £15 million, and Sir John has already hailed the product as the cornerstone of an entry into the office systems market (CW, August 17).

Since then, the company has introduced Japanese digital facsimile machines to the UK market under an agreement with Matsushita of Japan, Visual Sciences of the US and their joint subsidiary Panafax.

Plessey is also experienced as any UK company in writing software for the DEC PDP-11 minicomputer line, making it a straightforward task to put together a word processing system. The company could also acquire a US company in the office equipment field, although Sir John says that nothing is imminent.

Taking Plessey's statements about the monies at their face value, City observers are bemused at Plessey's apparent short term intention to use the proceeds from the sale to reduce its debt, pointing out that the investment in ICL could have yielded as much as £11 million this year, as against the £4.5 million it will gain from reduced interest payments.

The suspicion remains in some quarters that Plessey made the sale primarily because it needed the money to bolster its cash flow.

From ICL's point of view, the sale will be by no means unimpressive. In the heady early days of the National Enterprise Board, when Tony Benn was Industry Minister, there might well have been pressure for the government to buy the full Plessey stake. In the event, the NEB bought only enough to place a 24.42% stake up to a round £10 million. The possibility that Plessey might sell its ICL shares was raised at the announcement of the annual figures last month. ICL chairman Tony Hudson said then that he would "much prefer the shares to be sold on the market than to be sold to a single investor."

Other US federal agencies reported to be showing interest in the offer. One result of the sale has been a number of inquiries to the company, which will now be available to users, especially in the Control Analysis and Planning (CAP) field, founded in 1964.

DATA SYSTEMS NEWS

The new big name in computers

As industry leaders in high performance minicomputer applications, Perkin-Elmer Data Systems, formed in 1976 as the new computer products group within the multinational Perkin-Elmer Corporation, is set for major growth in 1979.

Compec winner receives prize



Winner of the Perkin-Elmer "Fun in the Sun" Competition held at Compec 78, Mrs J. Broadley, Woolworth programmer from Rochdale, Lancs, receives her prize, a £600 holiday for two in Tenerife.

The presentation is made by Gordon Ambidge, Marketing Manager of Perkin-Elmer Data Systems, with Tim Marston, Northern Region Sales Manager.

The competition was for visitors to the Perkin-Elmer Stand, who were asked to enter their estimate of the total attendance at Compec. Mrs Broadley gave an estimate of 28,557, closest to the actual figure of 28,558.

Thus, the integrated Data Systems Group offers customers the benefits of a single vendor for a broad line of computer products and complete systems with a background of major innovations, such as the first minicomputers with 32-bit architecture, Writable Control Store and Multipoint Memory.

The Group is exclusively dedicated to continued advanced product development as well as innovations involving radically different technology concepts. With the fiscal strength of the Perkin-Elmer Corporation as a base, Perkin-Elmer Data Systems is able to grow from a position of unusual financial stability.

The Perkin-Elmer name has been respected worldwide for 40 years in precision optics, instruments and other high technology products for all types of industry, for governments, medical institutions, universities and scientific laboratories.

Data Systems was formed when the computer industry was recognised by Perkin-Elmer as a logical area for expansion for a company dedicated to high technology.

TECHNICAL LEADER
As a first step, in 1974, Perkin-Elmer acquired Interdata, already established as a technical leader in mini-computers.

Terminals Division was formed when, following the success of the Carousel printer, it was decided to develop a complete range of video displays and printer terminals.

SINGLE SOURCE VENDOR

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Interdata 7/32 selected for Eurobond dealing system

Stockbrokers Strauss, Turnbull & Co, who in addition to their normal United Kingdom and foreign business are also market makers in the Eurobond market, are implementing a new Dealing and Settlement System as the second phase of their recently commissioned computerised arbitrage price display and foreign exchange conversion system.

FIRST PHASE SUCCESS
The decision to buy the Interdata 7/32 follows on the success of the first phase, based on an 8/16E from

Perkin-Elmer Data Systems. System design and application software for both phases have been undertaken by Triad Computing Systems Ltd, who selected an Interdata 8/16E with 128KB of memory and 10MB of disc storage for the application. The choice was made after careful examination of available hardware and was based upon the particular suitability of Interdata processors for multi-programming and multi-terminal applications.

COST EFFECTIVE
Further considerations were the favourable cost/performance ratio and the ease of system expansion due to total upward compatibility in the Interdata range. The first system

went live in mid-1978 and proved to be an immediate success. The proposed Eurobond System is a sophisticated one which will give immediate access (through the visual display units) to such information as clients' holdings of bonds, bonds in transit, outstanding deliveries, status of contracts and, most importantly, dealing prices and positions.

BRUSSELS LINK
Perkin-Elmer is also supplying ITAM - (Interdata) Telecommunications Access Method, which will allow the system to be linked with the Euroclear bond clearing system, computer in Brussels. Each day, all the relevant files holding Eurobond information will be updated to reflect Euroclear's actions.

ISSUE NO1

Fortran V11 out performs its rivals

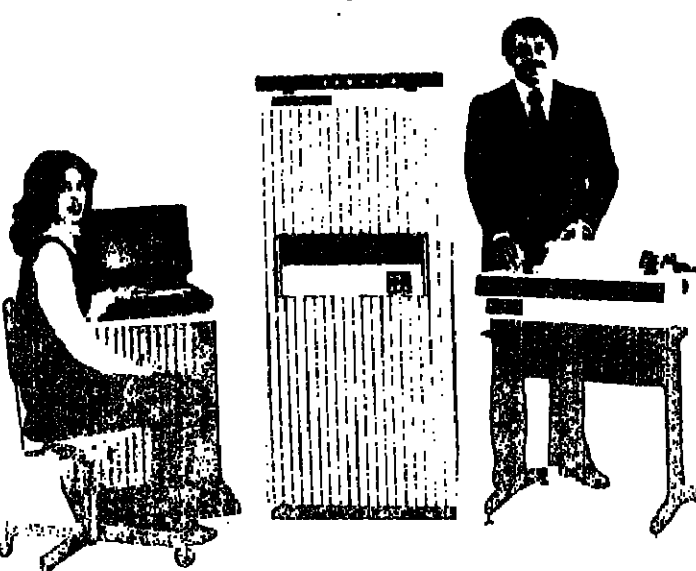
A globally optimizing Fortran for Interdata 32-bit minicomputers, Fortran V11 is compatible with both ANSI Fortran 77 standard X3.9-1978 and with IBM Fortran H.

The Fortran V11 compiler analyses all logical flow patterns and optimises globally over the entire program. Areas of optimisation include Constant Computation, Constant Propagation, Symbolic Arithmetic, Type Conversion, Array Linearisation, Invariant Code Motion, Strength Reduction, Test Replacement and particularly DO Loops.

FLOATING POINT
The hardware floating point processor option supports Single and Double Precision variables. In addition, the compiler allocates its floating point registers to user programs for the evaluation of expressions and temporary storage.

RUN-TIME LIBRARY
Fortran V11 programs are augmented by a comprehensive set of run-time library (RTL) routines. These include mathematical functions, language extensions, such as bit and byte operations, list processing operations and real-time extensions, such as external event conversions, multi-tasking and real-time file management.

HIGH SPEED
Also available is a high speed Fortran Enhancement Package (FEP) of mathematical functions, which makes use of Writable Control Store (WCS), containing hardware microcoded arithmetic routines, which execute in less than half the time of the corresponding assembly language routines.



Major new 16-bit range launched

The new family of packaged systems from Perkin-Elmer, called Interdata Series Sixteen, is based on a new range of 16-bit processors and is designed for OEM's and system houses in the business and industrial marketplaces.

An enhanced operating system and a full suite of languages have been provided for the Series Sixteen family, as well as a full range of high-level data communications products to allow communications with large mainframe hosts.

To quote Marketing Manager, Gordon Ambidge, "Series Sixteen provides high-technology, feature oriented systems that are available at lower cost than existing products. It provides OEM's with flexible configurations, from entry-level to large memory systems, that can be tailored to specific application needs — and expand with the application."

INTEGRATED SYSTEMS
Totally hardware and software integrated, all four Series Sixteen packages can be used for application work or, if you prefer, they are installed.

System 1615, priced at only £7,730, and aimed at distributed processing or small stand-alone applications, includes a Series Sixteen processor with 32KB of 900ns MOS memory expandable to 64KB, video display unit, page printer, memory processor integrity test and 312KB of floppy storage.

System 1624, priced at £12,220, offers a processor with 64KB of MOS memory expandable to 256KB and a CP120 matrix printer, as well as all the other 1615 features.

System 1625, at £16,740, is aimed at multi-terminal system applications and has 10MB of disc storage. An optional floating point processor is available.

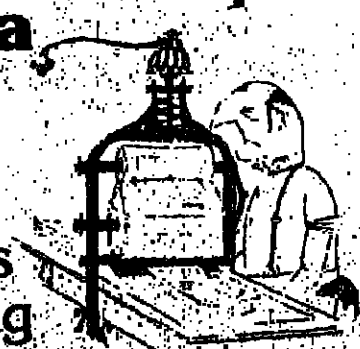
System 1635, top of the range at £20,360, offers maximum performance and data integrity. The

Publishers Ginn & Company who know how to read between the lines

booked an **Interdata** transaction processing system for their sales order tracking from

PERKIN-ELMER DATA SYSTEMS
227 Bath Road Slough Berks Tel: Slough 34511

The new big name in computers



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This issue also contains a special pull-out, which shows, by means of coloured charts, how the ionosphere behaves with regard to critical propagation frequencies. Just part of the excellent value Wireless World brings its readers every month — for only 45p. And in addition to its high quality articles on both practical and theoretical aspects of electronics, it has pages and pages of (45 advertisements for the electronics professionals.

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For further information contact Gordon Ambidge Slough (0753) 34511 • Tim Marston Manchester (061) 928 8713

Courses not available to many systems analysts

I AM in full agreement with the points raised by Owen Hanson in his article, Training of Business Systems Analysts (CW, December 14, 1978). Many systems analysts do not have a good general knowledge of the business environment. This is not surprising as the skills of programmers, systems designers and junior analysts, the steps on the career path to a system analyst, are technically rather than business oriented. The problem for the analyst is how to gain this knowledge.

It is commendable that the universities and polytechnics provide business analysis courses, but unfortunately these are not available to many analysts for the following reasons:

It can be difficult to be accepted on a post-graduate course without a first degree.

It can be very difficult to obtain the necessary financial support. Employers are reluctant to release staff for one to two year courses unless there is an immediate benefit to the company; expanding job opportunities is not a company benefit. Few analysts are likely to be able to finance themselves (a consequence of the recent rise in university fees).

The location of the university or polytechnic may not be convenient so that part-time and evening courses are not suitable.

There is clearly a need for private study and correspondence courses available

throughout the country. These could be supplemented by evening courses at colleges or further education or could be organised as post-experience courses by the Open University.

Some suitable courses do exist. There are correspondence courses for the BCS Part I and the Certified Diploma in Accounting and Finance, but I do not know of any course which covers the range of subjects included in the City University's MSc. Perhaps Mr Hanson could devise one.

JUDY COX
Consultant
Imperial College Computer Centre,
London, SW7 2BX

Wanted—information about SIR

WE are currently investigating the possibility of introducing the Scientific Information Retrieval (SIR) database system at Imperial College Computer Centre.

Weekly have experience of SIR. I should be very grateful if they would contact me, so that we may learn of various aspects of its use.

Any information given to us would of course be treated as confidential.

If any readers of Computer

LETTERS

To: The Editor, Computer Weekly,
Dorset House, Stamford Street, London SE1 9LU

Conforming to Third Normal Form principles

I NOTICED Bob Dale's letter regarding the Fourth Normal Form referred to in Max Stewart's relational database series. (I especially noticed it because Bob Dale lives in the next street to me although I have never met him myself.)

Fourth Normal Form was first referred to in an article in the Communications of the ACM in 1976. I do not know how well this paper has been accepted internationally, but certainly in this country it has been subject to much criticism from those

who advocate Third Normal Form.

As far as I am aware Fourth Normal Form arose from the fact that by applying the standard First, Second and Third Normal Form routines, one did occasionally obtain an answer which was not in Third Normal Form and hence a subsequent fourth iteration was required.

This Fourth Normal Form actually has all the properties of Third Normal Form. The need to analyse one's data prior to implementing any database management systems has been recognised for a number of years. The work of ANSI (Interim Report of the ANSI SPARC Study Group on Database Management Systems, 1975), the BCS (BCS Data Dictionary Systems Working Party Report, 1977) and indeed our own methodology (Entity Analysis), have considerably evolved the techniques available to analyse one's data and to ensure that any subsequent design does conform to Third Normal Form principles.

GEOFF BAKER
Chairman,
BCS Database Specialist Group,
CACI Inc International,
289 High Holborn,
London WC1.

Secret desires

THE report by Chad on the secret desires of captains of the computer industry (December 21, 1978), prompts me to offer refuge to CW readers who, like the MD of Plessey Microsystems, play clarinet or saxophone. The Clarinet And Saxophone Society (CASS) welcomes new members even from the computer industry — we're not proud. Further details from...

TREVOR BARNES
Computer Section
Trent Regional Health
Authority,
Fulwood House,
Sheffield S10 3TH.

Ratio will rise

IN your initial article on IBM's 8100 (CW October 12, 1978), I was quoted as saying that a customer who used both operating systems could be paying as much for software as for hardware. Of course, few customers will be using both operating systems, and in fact the price load of announced program products should not average much over 16% of system price.

However, I do believe that over a period the software ratio will rise, and with eventual independent or IBM application packages, could reach 50%.

Also, the ratio will likely be higher than 18% for those IBM systems to be announced shortly, which will utilise existing enhanced S/370 program products.

GIDEON I. GARTNER
Opentheimer and Co Inc,
New York.

Superior to older rivals

YOUR correspondent Mr Madison (Software File, January, is correct in asserting that it is technically possible to produce interpreted versions of Fortran, Cobol, or Algol, although the lack of ordered structure in the latter language makes it doubtful whether an interpreted implementation would be as good as compiled versions in that case. He is wrong, however, in believing that the superiority of Basic to these old languages rests on the existence of an interpreted version.

Basic, as implemented on modern minicomputers and microcomputers, is superior to its older rivals for two main reasons:

1. It can, with minimal port, be self-taught, it avoids the costly and time-consuming training programmes which more traditional languages need.

2. Being, fortunately, not subject to any artificially imposed external standard it is able to conform with the needs and experience of practice rather than being cribbed and confined within the bounds of an academic compromise.

Incidentally, the example which Mr Madison gives of a note can more efficiently written in the form

$80\ N = N - \text{SIGN}(\text{ABS}(X) - 90\ X = \text{ABS}(X))$

This not only reduces the number of statements but also avoids the use of GOTO statement which, for some academic programmers, is not entirely clear to some academic programmers and objectionable.

E. W. WATSON
Consultant
Wulford, Herts.

Computing in schools

IN reply to M. Bridger's article on computing in schools (5 January 4), how can his article "a sound infrastructure of computer personnel" be built without computing experience in schools where initial decisions and subject choices are made?

Having introduced a micro computer system into a school, my problem is getting girls writing programs and getting them to leave the keyboard at a decent hour in the evening. All this has happened without formal teaching of computer science.

I have never seen a more interested, self-motivated, creative as when introduced to the machine and left to experiment. How much more possible with adequate development and staff coupled with an examination syllabus in schools? I am afraid of getting a losing battle. The advent of micro computers in schools will get experience of computers provided for all.

Our very limited experience has been a road to educational success. Influenced by the subjects in the school, rough calculation of the study of computing and colleges which have bought every computer in the country. In the country, micro-outlets are power with a mum (teacher) in school.

The North
Norfolk...

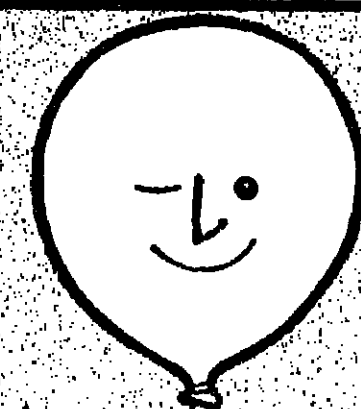
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Computer Operations Manager

Findus Limited, one of the major names in frozen foods in the U.K., has a nationwide terminal network based on a twin IBM 370/138 mainframe configuration. A vacancy now exists for a computer operations manager based in our Cleethorpes computer centre.

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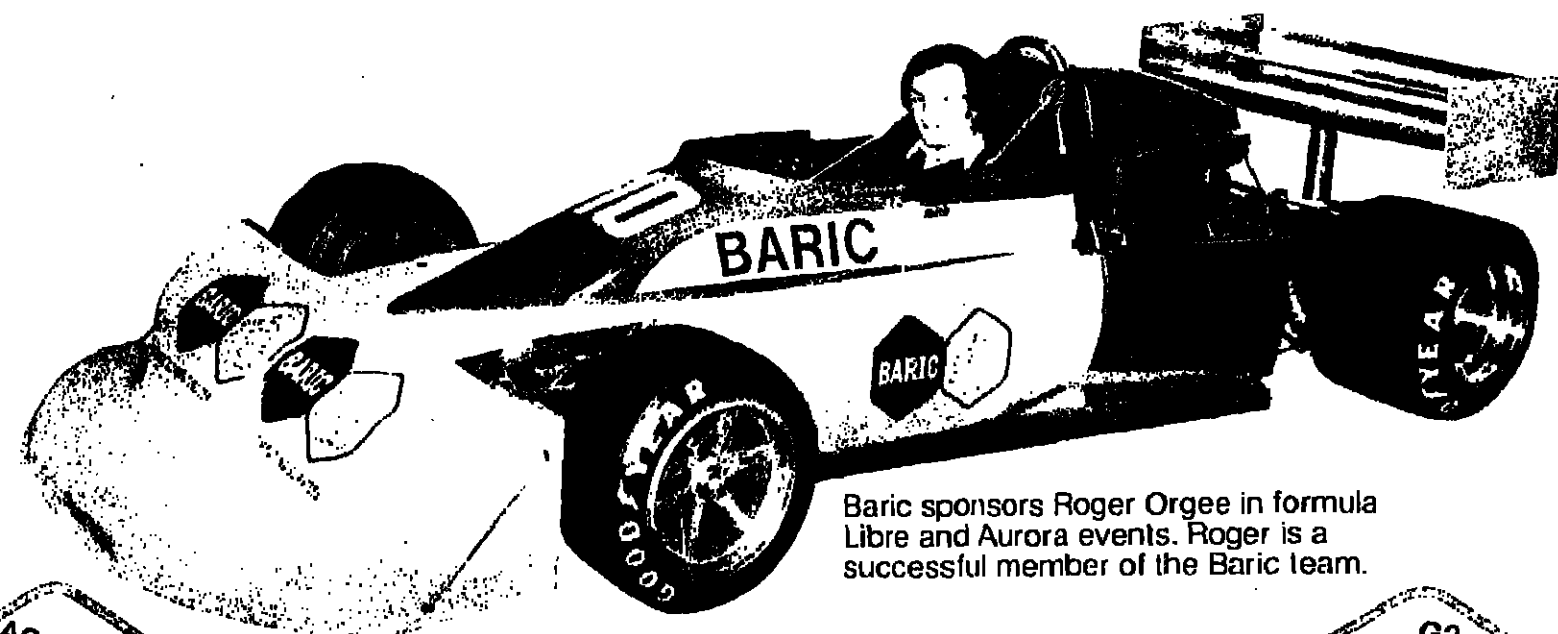
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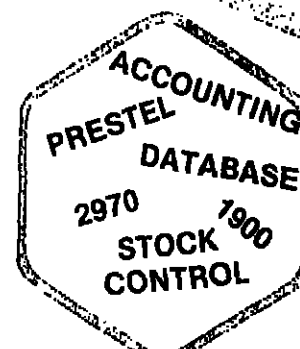
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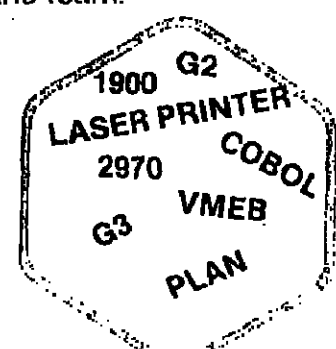
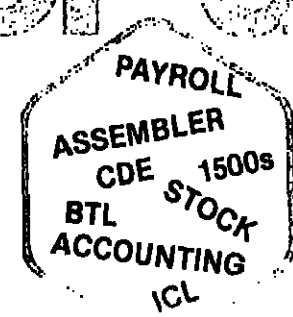
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Senior Programmers ^{LB2/1}
Required Urgently. Must have a minimum of 3 years good COBOL preferably with PLAN and/or FILETAB for a variety of Stock Control and Accounting Projects on 2900 and 1900 under G11 and G111. Experience of 2900 systems an advantage together with a knowledge of SCL. 2900 training will be given as necessary.

Trainee Analysts/Junior Analysts ^{LB2/2}
For Analyst/Programmers who wish to move into a total Systems environment or junior Analysts who require to broaden their Commercial experience, these vacancies represent the ideal opportunity to develop a Systems career with in-the-field training and total project involvement. Applicants should have a programming background and a knowledge of Stock Control or Accounting systems.

Senior Systems Analysts/Project Leaders ^{LB3/3}
Positions are immediately available for experienced Systems Analysts/Project Leaders with good Stock control or Accounting backgrounds who have a desire to work in a stimulating Commercial environment on a variety of projects. Knowledge of 2900 Systems is particularly required together with experience of TP and Database for a large Accounting project.

Senior Systems Engineer ^{LT5/1}
To assist the sales force in pre sales activity with emphasis on initial survey leading to outline sizing and costs. Commercial business experience with user contact is a prerequisite. Proven ability to have seen a project through to implementation will be an asset.

System Engineer ^{LT5/2}
To be involved in analysing to customers requirements and thus providing complete specifications for programming. Knowledge of small computers would be preferred. The opportunity to program will be available.

Programmer ^{LT5/3}
To program custom built systems, which may incorporate standard packaged software, to high standards. Proven experience of small computers will be preferable. At least one language as outlined in the hexagon above is essential.

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Senior Systems Analyst ^{LB4/2}
An experienced analyst with sound commercial experience preferably including payroll to work on all aspects of analysis including feasibility studies and evaluation, costing, design, specification writing and project control. A knowledge of ICL 1900/2900 equipment is an advantage but preference will be given to a person having seen a project through from design to live running.

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Contact: Andy Wright

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Contact: Mike Creamer

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Our client, a major software house with an impressive record, is continuing to expand its development projects and has vacancies in the design team of a large-scale commercial package.
Applicants should have at least three years' experience in the design of commercial and financial applications together with a sound programming background. Knowledge of ICL hardware and operating systems would be an advantage.
Starting salaries are negotiable according to experience. Generous fringe benefits include relocation assistance and productivity bonus.

Contact: Jim Baker

For further information on any of the above vacancies please contact the appropriate consultant.
If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

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Software Designers for Micro Based Systems

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We have been asked by our client, a micro systems house, to assist them in the recruitment of additional design programmers. Responsibilities will embrace all software aspects of new development work and the successful appointees will be expected to make a significant contribution to the project. Applicants must have had previous experience in either operating systems, compilers or communications facilities and be anxious to broaden their expertise to include micro-processor technology. Programmers should be able to demonstrate a substantial background in ASSEMBLER level languages. In this dynamic and growing environment, your long term career prospects will depend very much on how committed you can be.
Contact: Margaret Stevens

Junior Systems Consultant

Berks/USA/Europe c. £6,500 + BUPA
An opportunity has arisen in the European Systems team of this major manufacturing organisation for a Junior Analyst/Programmer, with at least two years' experience. The team provides project support and advice to installations throughout U.K. and Europe, so applicants must be prepared for a considerable amount of travel.
Ideally, candidates should have a degree plus an IBM COBOL background, but superb training is on offer for the right person.
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Contact: Andy Wright

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The candidates for Belgium must be fluent in French. Contact: Mike Creamer

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Product Managers will be responsible for the release, distribution, in-house training, maintenance and technical support of the company's products throughout Europe. There are several openings for managers for new as well as existing software products, primarily in the DOS/VS area.
Applicants will have a thorough knowledge of Assembler as well as the DOS/VS operating system.
In addition, an ability to communicate clearly with users and local in-house technical support staff is necessary. Occasional short-term travel within Europe is part of the job.

Phone RICHARD CRAWFORD now. He will put you in touch with Computer Associates immediately.

REF C-2342

ABRAKAS WEST END HOUSE
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Ports Industry Data Processing Management

British Transport Docks Board is a commercial and profitable organisation employing 12,000 staff at various locations throughout the U.K. The Board's Computer Centre, located at Hayes, West London, provides development and operational computer services for the Board's 19 ports and for other port industry organisations. The Centre has recently completed a major review of the ports' computing requirements. To satisfy these requirements, mini-computers with visual displays and communication facilities have already been installed at some of the ports and it is anticipated that the Board's mainframe computer will shortly be replaced with a more powerful machine with extensive on-line capabilities. In order to support these developments the Board now requires the following senior management staff:

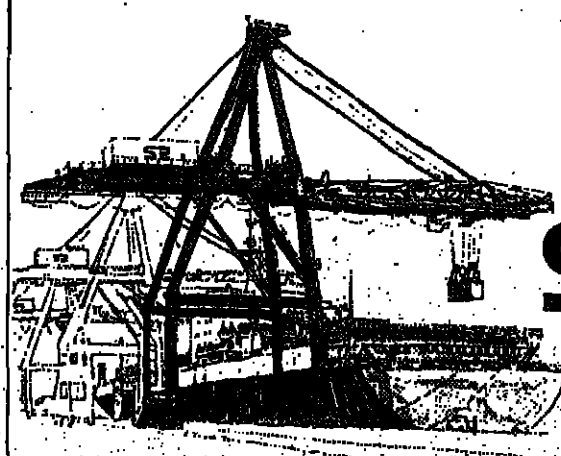
Systems Manager

Up to £7,364 per annum (including London Allowance)
Will be responsible for advising the Board's management on the use of computers and for managing all aspects of the development work undertaken by a team of up to eight systems and programming staff working on a variety of projects. Applicants should ideally possess a degree or relevant professional qualification and have several years' project management experience of commercial applications.

Chief Programmer

Up to £6,537 per annum (including London Allowance)
Will be responsible for the technical management of the programming function, advising the Board's management on computer software. Duties will include controlling all aspects of the Board's programming standards and optimising program design, development and maintenance work. Applicants should ideally possess a degree or equivalent qualification and must have previous programming management experience, at least 4 years' experience of designing and developing computer systems and a broad knowledge of miniframes, mini-computers, telecommunications and operating systems. Suitable experience as a Systems/Programmer with a computer manufacturer or software house would be regarded as a relevant qualification for this post.

The Computer Centre is easily accessible from the M4 motorway and the Western Region British Rail (Hayes and Harlington Station). Conditions of service include 32 days (including statutory days) holiday per annum, sick pay scheme, pension scheme and luncheon vouchers (60p per day).
Applicants are invited to write to the Personnel Department, British Transport Docks Board, Melbury House, Melbury Terrace, London NW1 6JY or telephone Jim Haraway on 01-486 6621 extension 6441.



British Transport Docks Board

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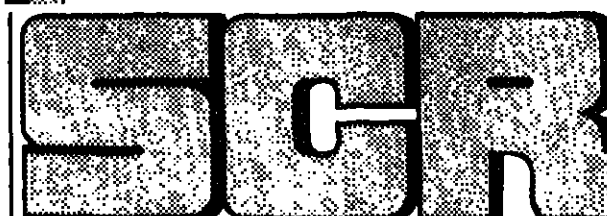
SCR has been retained to recruit a Shift Leader on behalf of a major International Organisation. The successful applicant will be based at the Manufacturing and Distribution Centre in South Wales where an IBM 370/138 is housed making extensive use of CICS to control a TP network for on-line interrogation throughout the company.

Candidates should be able to demonstrate

- * three years' operating experience within a 370/360 DOS/VS installation
- * a working knowledge of DOS JCL
- * an appreciation of a TP environment

This position represents an exciting prospect for an experienced Senior Operator who is seeking a supervisory post within a medium sized installation. If you feel you have the necessary attributes to control and motivate staff, contact:

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Computing
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Software Engineers**Find challenge and reward in the West Country with Normalair-Garrett**

Normalair-Garrett Limited is a high technology organisation involved in a variety of businesses including the design and manufacture of aircraft air-conditioning equipment and a product range that includes oxygen equipment, hydraulics and electronics. Continuing product development both within and outside the aerospace industry, together with an ambitious planned expansion programme, creates the need for additional software engineers.

We are looking for graduates with at least 2 or 3 years software experience in one of the following areas: Main frame computer software (IBM), mini-computer software (particularly in ASSEMBLER language) or micro-processor software and/or firmware. Experience in FORTRAN, BASIC, ALGOL,

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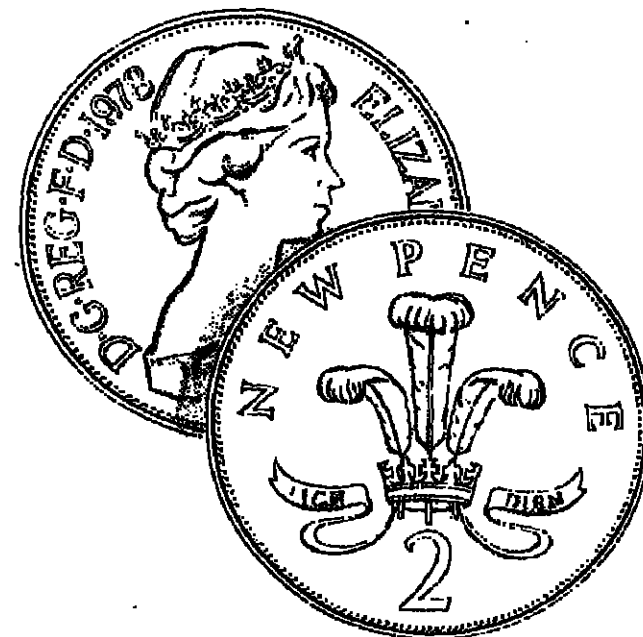
in the above department, to assist in all aspects of the maintenance and development of the Student Computing Service, and in particular the documentation and software for the DEC System 10 computer. The opportunity may exist for some participation in academic teaching. Candidates should be graduates with appropriate experience. The appointment will be made for a fixed period of three years.
Salary on the IB scale for Other Related Staff £3,384-£5,804 (under review) according to age, qualifications and experience.
Application forms and further particulars may be obtained from the Registrar, The University, Leeds LS2 9JT, quoting reference number 48/13. Closing date for applications 14th February, 1979.

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The main systems used are a DEC SYSTEM 20 for Time-sharing and Batch and a PDP 11/40 for Real Time and On-line applications.
The Computer Operator (Technical) will provide technical support for the installation and maintenance of equipment, including terminals, data communications and microprocessor systems. He/she should be experienced in electronics, preferably related to digital hardware, including terminals and microcomputer systems. The person appointed will also assist with the operation of computer equipment.
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2 x COBOL PROGRAMMERS £5,000 - £6,250
2 x Jnr Programmers £4,000 plus

For more information phone Andy Mogg on the number below:

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To work in a new dept. of this company, in Brighton. 2 shift system - no night. Will consider assistance with moving. 12 months + Burroughs experience. SALARY £3750 - £4000 neg.
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DEC PDP 11/34 OPERATOR, Epsom, Surrey.
If you have about 2 yrs experience with a PDP 11 or any other other mainframe computer and you want to work outside London in a small D.P. dept. this might be the job for you. SALARY C. £3,500 but negotiable.
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Staff Services Division of BEC Datacube Group and a member of Computing Services Association

Systems Specialists Analysts Programmers Lecturers

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Benefits package includes car.

We are looking for a Software Manager who will be responsible for a section of our software operations. Based at Colchester, the manager will be required to organise and administer the commercial function of our sub-systems software group.

The job: to manage a growing department which includes heading a team of senior systems analysts network designers, programmers and installers; to be able to contribute effectively towards the development of the Company's software policy.

The successful applicant must have at least 4 years' experience in data communication.

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Benefits package includes car.

Based at Colchester, to be responsible for the design of data communication networks for our range of computer terminal systems; to give sales support in the design of networks for the task force and our major Accounts Department; and to provide advice and support for our Software Services Department, which may involve travel throughout the U.K. Candidates should hold a degree, have a minimum of 5 years' experience in the computer industry, of which the last 2 years will have been in data communications and network design.

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Based at Colchester, the successful applicant will have a minimum of 4 years' relevant systems and programming experience. With a COBOL background, the Systems Support Specialist will prepare detailed evaluation and testing of new hardware and systems software prior to product release, and ensure a subsequent support on that product. This may involve travel to our main industry Group Headquarters in Apeldoorn, Holland.

Senior Systems Analysts and Systems Analysts

Benefits package includes car.

Based at Colchester, Manchester or Glasgow, we require systems analysts with a minimum of two years' systems and programming experience, preferably with data communication knowledge.

A general commercial background will be an advantage.

The successful applicants will be involved in customer liaison, analysis/design installation and testing of equipment. This involvement will be with mini computers and terminal systems.



Analyst/Programmers

Based at Colchester we require Analysts/Programmers to work within our Software Centre and in our sub-systems group. The successful applicants will be involved with the control of projects, writing and vetting of specifications, programming, estimating and scheduling. This will also involve the applicants in analysing and designing small to medium systems. We are looking for candidates with at least 3 years' experience in Programming or Systems Analysis.

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We require systems lecturers for our Education and Training Department at Elektra House in Colchester, on small business computers and data communication based mini computers.

The successful applicants will be involved in presenting courses on the management programming and operation of the range of products and peripherals. Lecturers will be expected to develop new courses when extensions are being made to the Company's product range. Lecturers are expected to develop 'Training Packages' for users and to prepare and implement 'Self study' training aids.

The successful applicants may be required to travel within the U.K. and Europe. Applicants should have at least two years' experience in programming and systems work.

For both lecturing positions, previous experience in training is desirable, but not essential, as training in basic lecturing skills can be arranged.

Operations Lecturer

Based at Elektra House, Colchester, we require an Operations Lecturer to join our team of lecturers. The successful applicant will be required to assist prepare and give training courses for mini-computer operators.

Applicants should have experience of V.R.C. and flexible disk based systems, or small business computers.

In all positions, which are open to male & female candidates, Philips offer you the opportunity to widen your experience in the challenging environment on an expanding computer marketing company.

Philips provide extensive in-company training facilities and excellent prospects for career progression on a wide range of products and in several software related activities. You will receive an excellent salary and conditions of employment plus the security of working for part of the world-wide Philips Group. Generous re-location assistance will be given where necessary.

Please write quoting ref. CW, or telephone for an application form to: Mr. H. W. Hampson-Jones, Personnel Officer, Philips Data Systems, Elektra House, Bergholt Road, Colchester, Essex CO4 5BE. 0206 5115.

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Data Systems

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from £5250

There are two areas where, as an experienced Programmer with upwards of two years' COBOL gained on any machine, you can develop your career by using the most modern hardware and software.

* **THE TECHNICAL SUPPORT PROGRAMMERS** will develop tele-processing facilities, communications and machine performance projects, general purpose software programs. They will liaise with and advise staff in other areas of DP on the effective use of the software available.

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- * IBM training in System 34
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RW 3/6

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Our client, a leading company in the field of electronics and telecommunications, are offering an unsurpassed relocation package, one that cannot help but appeal in these days of rising property prices. In doing this they hope to recruit the sort of person such as yourself, someone who has two or more years experience of High level language, preferably with a Degree in Maths, Science, or Engineering, and a desire become a member of, or lead a team of people involved in probably the most important software development in recent years.

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Our customers are the biggest and best names in manufacturing industries all over Europe. They buy CV because it is the best — They expect the best support. So if you want to support the best in UK manufacturing, contact Geoff Hall at Computervision Ltd., Computervision House, Penn Street, near Amersham, Bucks. Telephone: Holmer Green (04947) 4771.

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to be responsible for all aspects of system support including system generation, development and maintenance in an OS/VS1 environment supporting IMS.

also IMS SPECIALIST

to work within a small specialist team responsible for providing a consultative service to application development groups on all aspects of database and data communication.

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370 Software Support

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If you are involved in advanced laboratory work you are familiar with the range of our mini computers used in a wide variety of research applications by government, industrial and medical establishments.

You should be a graduate with experience of computer applications in a laboratory environment or, better still, have a background of sales

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Your knowledge of mini computers or Digital electronics could lead to a rewarding sales career with Digital.



So if you are a successful sales professional or believe you have the potential to become one then ring Niki Holland on 061-865 8676 or write to her at Digital Equipment Co. Limited, Arndale House, Chester Road, Stretford, Manchester M32 9BH quoting reference no. CW 494.

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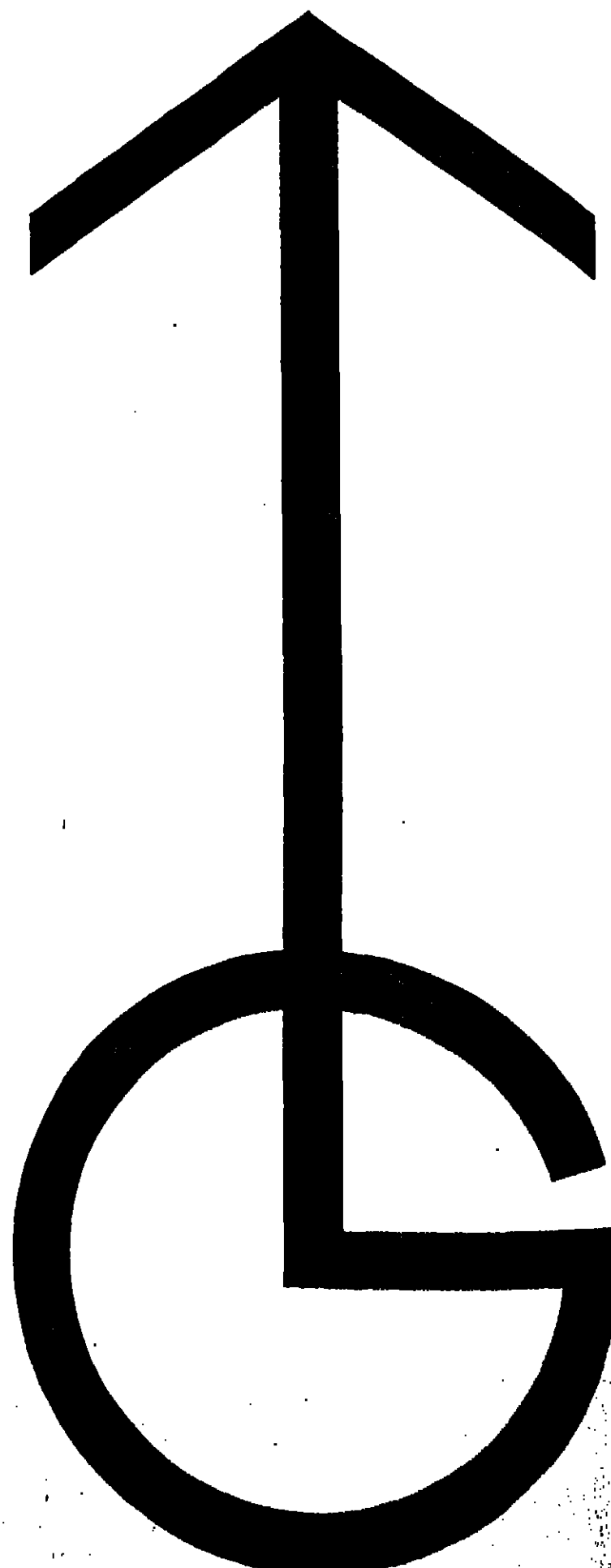
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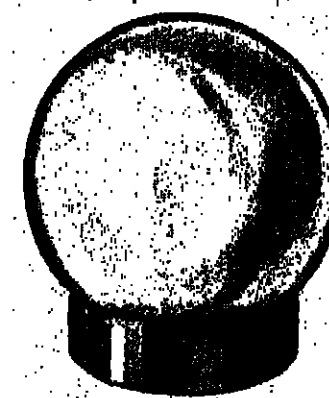


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Monday, 29th January is the date, 4.30 pm-8 pm is the time and 150 Regent Street, London W.1. is the place.

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This is work calling for a technical education to at least City & Guilds level. You should also have a good knowledge of DTL techniques and preferably experience of Myriad 1, 11 or similar equipment. Specialised instruction can be given in areas where experience is lacking.

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Your total earnings will be at least £16,350 TAX FREE over two years, including bonus and cost of living allowance. In addition you will receive:

- ★ Three paid leave periods annually with three free flights home to the UK
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Ref: 11148/CW.

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Hoggett Bowers
Executive Selection Consultants
BIRMINGHAM, CARDIFF, GLASGOW, LEEDS, LONDON, MANCHESTER, NEWCASTLE AND SHEFFIELD.

HAMPSHIRE County Surveyor's Department
SYSTEMS ANALYST
Grade S01 £5232-£5568
A vacancy exists in the Department's Computer Section for a Systems Analyst to assist in providing an efficient computer service to the Department. The section supports a variety of applications in areas including highways, structures, traffic and transportation, water and property management. The successful applicant who will be concerned with many aspects of traffic and transportation engineering systems should have a degree or appropriate equivalent qualifications and should either:
a) Be fully conversant with FORTRAN and IBM OS Job Control Language and have several years' experience of technical computer applications or
b) Have a sound knowledge of traffic engineering and transportation planning techniques and associated computer systems and an aptitude for computing and some knowledge of FORTRAN. The County Council operates 2 IBM 370/148 machines with access via terminals and a BULL host. For job description and application form returnable by February 6th, 1979 apply to: The County Surveyor, The Castle, Winchester SO3 3UD, quoting reference 5655 CB/2/165.

Ref: 11148/CW

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£13,000

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Opportunities now exist throughout the UK to join their dramatically successful computer division. With their long term experience they are capable of offering terms of employment unavailable elsewhere. Initial product training is designed to enhance product quality. Excellence of service support ensures that the successful sales executive need never worry about reliability.

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Quota commission earnings and generous bonuses ensure that the truly determined will achieve first year earnings of £13,000. A quality saloon car, full expenses plus other multinational company benefits complement this desirable package. For a confidential discussion please contact your nearest branch.

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230 GL. Portland St. W1N 5HG 66 Cross St. M2 4LA Woolworth Building, 102 New St. 36/38 Baldwin St. B51 1NH Anglia House, 24/26 Frederick St. 36 The Broadway

Business Systems Manager

East Midlands Based
c. £8500+car

Our client, a major British group in printing, packaging and publishing, has embarked on a long-term plan to investigate, develop and implement new manual and computer systems for all users in the organisation. Computer systems will be developed for the central mainframe or distributed equipment as appropriate.

The successful candidate will be responsible for the investigation of business requirements and the subsequent specification and implementation of commercial and financial systems, in conjunction with the Computer Services Manager where computer solutions are appropriate. The Business Systems Manager, who will report directly to the Group Finance Director, will control a small multi-disciplined team of Business Systems Analysts.

Our client invites applications from systems professionals with around 8 years experience in systems development, project scheduling and control at a supervisory level. The person likely to meet the requirements will be more interested in getting involved in the practical solution of business management problems than in the technical aspects of DP.

An excellent starting salary around £8500 will be offered to the successful candidate, together with a company car and significant benefits package. Relocation expenses will be available as appropriate.

Please phone for Personal History form, or write enclosing CV to Tony Palframan, quoting reference number N58. Applications are invited from either sex.

BIS Applied Systems Limited
Quay House, Quay Street
Manchester M3 3JH
Telephone 061-831 7031



SYSTEMS ANALYSTS

Saudi Arabia up to £15000 tax-free

OUR CLIENT is a diversified trading, service and investment organisation and is playing a significant role in the thriving commercial life of Saudi Arabia.

CAREER OPPORTUNITIES exist for two exceptionally well qualified Systems Analysts who are able to instigate, design and implement major data base orientated commercial systems under minimum supervision. Professional and technical capability of the highest level is required. The positions are based in Al-Khobar where the Company has modern air conditioned offices and will shortly be installing an IBM 370/138 with 1 Mbyte.

CANDIDATES must be self starters, have spent at least five years in Systems Analysis and two years as a Project Leader for a major system development. In depth experience with COBOL and IBM OS is imperative—as is proven experience in the area of Inventory Control and Accounting Systems, preferably in the food distribution/heavy equipment industry.

ATTRACTIVE TERMS include free housing and utilities, senior ex-patriate fringe benefits, car allowance and a substantial tax-free salary. These are career appointments.

Please write in sufficient detail (Ref: CW 135), making an application form up to David May—Adviser to the Company.

Peter Davidson
3 Mandeville Place Wigmore Street, London W1M 5LB 01-462 8000

IBM Systems Engineers

Paris based + Worldwide Travel
Salaries up to £18,500 p.a.

We have been retained to recruit three Systems Engineers for our client, a very large and influential French Computer Services company. Employing up to 2000 people worldwide, their bureau services are based on numerous IBM machines, ranging around 3032's and 370/168's downwards.

Candidates must have a thorough Systems Programming knowledge of IBM operating systems OS/MVS or VM, and be able to communicate with users to advise and support the various systems. Successful candidates do not need to speak French at present, but will be required to learn the language in due course.

Two months travel a year is envisaged to Japan, USA etc, as well as inside France.

CW 3/1

Software Salesman

London Sal.: Neg. + Comm. + Car

Our Client is a rapidly expanding specialised Software House, who are looking to broaden their markets through 1979 and 1980's. They are looking for an experienced Software Salesman to supplement their team of hardworking Analysts and Programmers.

Applicants are sought from D.P. professionals with several years experience in the industry. Some experience at technical level would be welcome, however, the main requirement is a proven record of their ability to market Software applications. Additional experience in on-line techniques and knowledge of Audio Response Equipment would be a distinct advantage.

CW 3/2

Systems Co-ordinator

Berkshire c£6000 + Car

A large manufacturing company with plants in Great Britain Ireland and throughout Europe, currently require a SYSTEMS CO-ORDINATOR for their European Headquarters in Berkshire.

Our clients' financial systems for their domestic and continental requirements are based on a large accountancy package which is processed through external bureau services. The successful candidate will be responsible for the day to day control of the existing system plus the development and enhancements that will be required on an ongoing basis.

Applicants should be Systems Analysts with financial systems experience, and should be able to demonstrate a mature approach, together with the ability to work very much on their own initiative.

Our clients consider this position to be a key role in their European operation and expect this function to steadily grow in both volume and importance over the next twelve months. In addition to a competitive salary and company car, other benefits include non-contributory pension and sickness schemes.

CW 3/3

Programmers & Analysts

Middlesex/Hertfordshire £6600 p.a.

A Data Processing Department is the backbone of any successful company, especially if the company is a Multi Million Pound manufacturing Organisation with a turnover in excess of £1,000 million.

That is why we would like to hear from PROGRAMMERS and ANALYSTS who can become members of the team for the development of new Commercial applications. The installation presently runs dual 1900's under G2+, but owing to the continual demand from users, one of the 1900's is shortly to be upgraded probably to a 2980.

Programmers will need at least 18 months' experience of Cobol knowledge of G2+ and Datadove would be an added advantage. Analysts will need a Programming background with 18 months' experience, although Programmers who wish to advance their career into Analysis will also be considered.

The Company can offer an excellent career path through to Management, plus the usual benefits of a large company which includes Staff Shop, Sub Concession, Sports Club, Life Assurance and 4 weeks' holiday per year.

CW 3/6

Intel

West London £4800-£9300 + Overseas

If you have 2 years or more Assembly experience, with at least 6 months on Intel hardware, and are available to start in the coming weeks, we would like to hear from you, to arrange immediate interviews. The project is based in West London with the opportunity of overseas travel to Europe and the U.S.A.

We are recruiting for an internationally known Software House, who require PROGRAMMERS to help them with an exciting new project.

If you have the above experience but require a longer period of notice we would still like to hear from you, so you may be considered for future vacancies.

CW 3/1

Programming?

London/Home Counties/Overseas
To £7000 + Bonus + Expenses

Experience of 1100 COBOL is one of the more immediate requirements needed by our client, an international software house, today.

Fortunately, our client being one of the oldest and most respected companies in the industry can and do offer a lot more than the majority of their competitors. These benefits range from genuine career progression to Project responsibility. Salaries + Bonuses are related to one's contribution to the company, and there is the prospect of interesting assignments in the UK and overseas.

As mentioned above, we seek candidates with Univac COBOL experience, but due to the overall business base being spread over all the traditional mainframes our client can and will offer interesting job opportunities to programmers with 2 years or more COBOL on any machine.

CW 3/5

Analysts & Programmers

London To £7000 + Car Scheme

An exciting opportunity has developed for ambitious Analysts and Programmers to join a medium size, expanding computer company involved in automobiles and finance industries.

Our client's computer operations are based on NCR CENTURY 75, which will be upgraded in April 1979, to a Criterion 8670. Development is in progress on an interactive on-line communications system using audio response equipment on a nationwide basis.

They would like to hear from Analysts with a Programming background and have had some proven systems experience. It is unlikely you will have had less than five years in the D.P. industry. Also we would like to hear from N.C.R. trained Programmers who have had between 1-5 years' experience.

Continual company growth based on the development of external customers systems, guarantees excellent prospects for suitable employees who are prepared to work hard.

CW 3/7

System Staff

Surrey/Middlesex Border £5000-£7500

Plans for expansion in the services offered by the D.P. Division of a Multi National food manufacturing company, mean that a number of opportunities exist for the right people to achieve satisfaction and advancement in an exciting environment.

The company requires systems staff in the following areas:-
* Data Base and on-line development on IBM 3032.
* System 34 and 38 development.
* System review and audit.
* Accounting and Financial Planning systems Development.

CW 3/8

Honeywell

N.W.3 £6000 +

Our clients a National Transport organisation, who have their head office in Swiss Cottage have vacancies for PROGRAMMERS AND ANALYSTS for their Honeywell 68/40 installation running under GCOS and using TDS/IDS.

They are looking for Analysts with a programming background who wish to be involved in projects such as Management Information and Financial Planning.

They also need programmers with at least two years' experience preferably on Honeywell, who have a working knowledge of COBOL.

The Mainframe is situated in Birmingham and linked nationally by a series of terminals.

The company is part of a very large corporation offering excellent career prospects to the right candidates.

CW 3/9

Central Computing Consultants

KINGSTON: 44 Wood Street, Kingston upon Thames, Surrey, England. Telephone 01-549 3212 Telex 27950
DUBLIN: Canberra House, 24 Lower Leeson Street, Dublin 2. Telephone 789577 (5 Lines)

Licensed initially by the Dept. of Employment No. SE (R) 170

WEST OF LONDON

TO £9,000

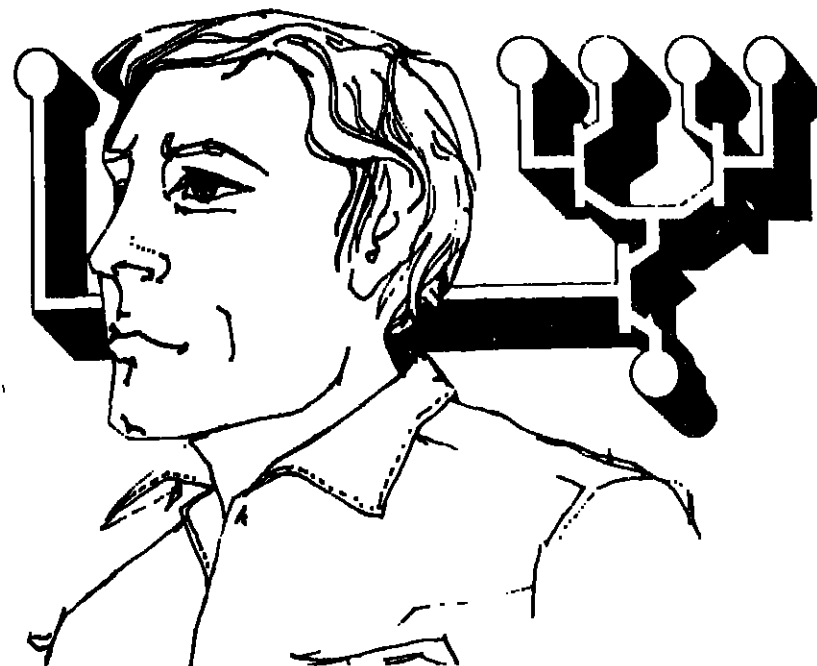
We are currently assisting a major Electronics company in the recruitment of an experienced professional who will play an important role in the development of systems architecture and software for a

future range of high integrity computer based communication products. This senior appointment will be of interest to candidates who can demonstrate a proven expertise in a number of the following.

- * Systems Programming
- * Computer Architecture
- * Software verification techniques
- * Operating System Design
- * Data protection mechanisms
- * Communication Systems

In addition candidates must be able to communicate clearly and effectively at all levels. The position will be based in a pleasant rural location West of London and will involve overseas travel primarily to North America. Full relocation will be provided if required.

If you are looking for a competitive salary package plus fringe benefits, but most important of all a CHALLENGE within a large expanding organisation with considerable development resources then ring Colin Hush on 01-629 7262 for a confidential discussion.



ANALYSTS PICTURE YOUR FUTURE

— THIS IS OUR CLIENT'S

Word processing, on-line, real-time, database — all these form an integral part of their current developments. A defined growth path based on a large IBM 370 will lead to their commercial objective of distributing information processing.

The users are clamouring for new systems and are enthusiastic about the future. Additional Business Analysts are needed to fulfil that confidence.

CROYDON

Starting Salaries to £7,000
Opportunities exist at all levels

This expanding environment can provide tremendous job interest and satisfaction and personal development should be fast. If you have a broad commercial systems background then this could be your opportunity. *The essential is the ability to understand the users needs and relate to their problems.* Our client is a major financial company and benefits such as non-contributory pension, LVs, and flexitime apply. To find out more telephone our CROYDON office or write quoting ref: CW 101-9H.

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01-686 9693 (24 HOUR ANSWERPHONE)
19, PARK STREET, CROYDON, CR9 1TN

SYSTEMS ANALYSTS HOW ABOUT THIS TO START 1979

	PROJECT LEADERS	SENIOR ANALYSTS
WHERE	N. W. England	N. W. England
SALARY	to £7250	to £6250
BONUS	Substantial	Substantial
RELOCATION	Full	Full
PROSPECTS	Excellent in expanding installation	Excellent in expanding installation
EXPERIENCE	5 years + including some programming	3 years including some programming
REFERENCE	CW/ 79005	CW/ 79006

These are specific client vacancies which we have been retained to fill.
Please contact Ivor Norton quoting appropriate reference in order to arrange preliminary interview.

Ivor Norton Management Services Ltd

Recruitment Consulting Division

52 Shaftesbury Avenue, London, W1V 7DE. 01-734 8862 (Day or Evening) P.O. Box 93, Central Telephone House, 100, North Street, Ipswich, Suffolk, IP1 1PS. Tel: 0473 60825

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BASE SALARY TO £7,500
P.A. PLUS COMMISSION —
PLUS HIGH QUALITY CAR

This is an exciting opportunity to join a privately-owned, highly successful, well-respected Software Services Organisation, whose commitment to commercial package technology has ensured their success both within the United Kingdom and Internationally.

IDEALLY CANDIDATES SHOULD HAVE:-

- * a broad knowledge of commercial systems
- * a proven sales ability coupled with a high level of self-motivation
- * a preparedness to fit into the smaller company environment

OUR CLIENT OFFERS:-

- * realistic and achievable quotas
- * genuine long term career prospects
- * full technical support and back-up facilities.

Join this influential Group of Professionals, active in the most buoyant sectors of the software industry.

Non-contributory pension, free BUPA and many other benefits apply to the above position.

CONTACT: RICHARD CHAMPION, ADVISING CONSULTANT
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SPECIALIST COMPUTER RECRUITMENT LIMITED

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FORTRAN
Programmer urgently required for Industrial and Scientific Development
£3,500-£8,000
ALL AREAS
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SOFTWARE INSTRUCTOR *Bank*
Experienced in teaching computer systems to students of applied science, engineering, business and management. Good company benefits.
SYSTEMS ANALYST *Bank*
Experience of computer systems environment but no programming background not necessary. Two year probation.
ANAL/PROG *Bank*
C/O/O/I. In regional and home analysis positions for the I.C.I. P.M.I. installation.
PROG/ANALYST *Only*
Knowledge of COBOL a main requirement for an existing company. Attractive regional. Good company benefits.
168 Finchley Road, London, NW3 8HP

Senior Computer Operator

Candidates for this job should be at Operator or Senior Operator level and should have at least 2 years 1900 range and George 3 experience. A proven high level of understanding of G3 is required.

The Laboratory at present runs a 250K ICL 1904S for scientific research work, using both MOP and background. As well as the terminal configuration, a network of mini computers is connected to the 1904S.

In the near future a second 1904S will be added, accessing the same file store

by use of a special version of George 3. Working hours are evenly split between 8.30 - 16.30 and 14.00 - 22.00 Monday to Friday.

The Laboratory is housed in modern buildings in pleasant surroundings and offers benefits including subsidised canteen, sports and club and staff shop.

Men or women should apply, quoting reference 128, to Mr. L. V. V. Personnel Manager, Philips Research Laboratories, Central Park, Salford, Nr. Manchester, M6 6PU.



COMPILE TO CONSOLIDATE

PROGRAMMER

SMALL TEAM

N.W. LONDON c £5000

Our client, one of the UK subsidiaries of a large American conglomerate, has recently installed an ICL 2903 and now require an experienced programmer to assist in the implementation of a complete range of new systems.

As with most successful organisations, extensive dependence is put on the speed and accuracy of information made available to support company policies and decisions.

The successful applicant, with at least EIGHTEEN MONTHS' COBOL programming experience gained in a commercial environment, will work closely in a small and friendly installation where being a member of a small team will give you the opportunity of gaining total system involvement and the possibility of gradually exercising your own analytical potential.

This is an excellent opportunity for a person to consolidate their programming skills in a professional environment and is supported by the offer of a realistic salary and attractive company benefits.

Ref: N1/1801

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA
01-353 0981 (24 HOURS)

NEW TWIN ICL 2950 SITE (HIGH WYCOMBE)

If you're interested in joining a successful progressive company, then we still have a number of opportunities for men and women at our new head office installation at High Wycombe.

We're responsible for importing high quality Volvo cars and parts for supply to dealers throughout the UK. To further improve our business performance we're currently developing a wide range of computer systems to upgrade our operations in all areas. In addition work is under way to install micro-computer systems in Volvo dealerships throughout the country.

Programmers/ Senior Programmers £5000 - £6000

You will be working closely with a Systems Analyst in the development of commercial systems. For the senior positions you should have at least two years' experience of COBOL. Programmers should have a minimum of one years' experience of either COBOL or RPG.

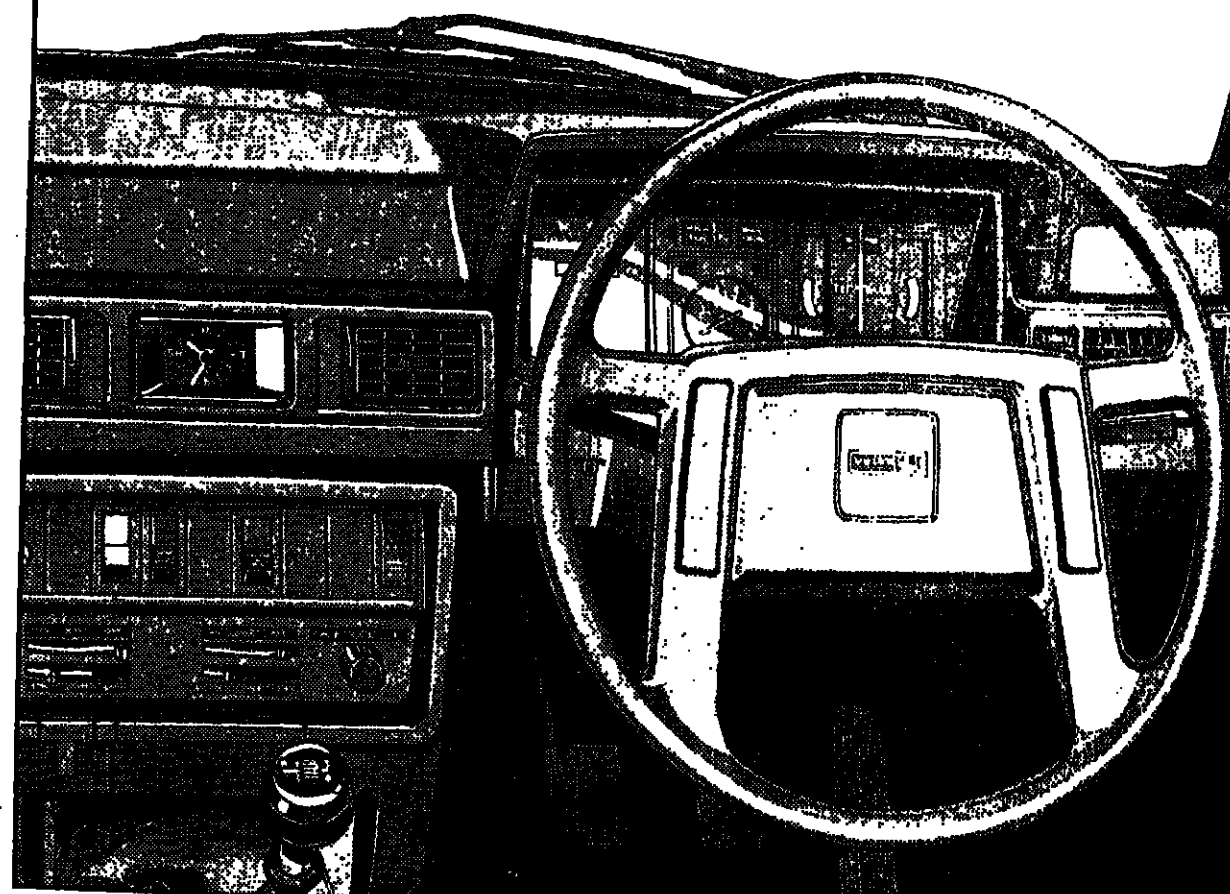
Senior Computer Operators/ Shift Leaders £4500 - £5200

You will operate the ICL 2950's, communication terminals, and micro-computers. In the case of the senior appointments you will be responsible for the running of the shift.

You should have had previous mainframe experience, preferably with an ICL 2903/4 or ICL 1900 operating under George II and be prepared to work on a 5 day, 2 or 3 shift basis.

Conditions of employment are those you would expect from a successful company including 5 weeks holiday (programming staff), 4 weeks holiday (operator staff), non-contributory pension and sickness schemes and car purchase discounts. Generous assistance with relocation will be provided where appropriate.

Please telephone or write for an application form to: Mr. M. Rogers, Personnel and Training Officer, Volvo Concessionaires Ltd., Lancaster Road, Cresswell Industrial Estate, High Wycombe, Bucks. Tel: (0494) 33444.



VOLVO

SYBRON Taylor

PROGRAMMER

required with 1/2 years' Cobol to work in small, friendly EDP Department on a variety of applications such as Inventory Management, Production Control Planning, Sales Ledger, Purchase Ledger, Payroll and Work In Progress Costing.

We offer a competitive salary, contributory pension scheme, free life insurance and are situated in the beautiful Sussex countryside on the edge of the Ashdown Forest. There is a direct line to London (Victoria) Hastings.

If you are interested in Systems and Programming, are looking for a varied and interesting job with excellent prospects please contact:

The Personnel Department
Taylor Instrument Analysis Ltd.
Crowthorne, Berkshire RG4 0AA
Crowthorne 2181

COMPUTER PERSONNEL APPOINTMENTS LTD.
Career Specialists and Consultants for

D.P. MANAGERS, SYSTEMS ANALYSTS,
PROGRAMMERS AND

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Midlands, Northern Counties and Scotland
For application forms apply to:

68 New Street, Birmingham B2 4DU, 021-643 0981
or Tel. 01-328 7261

SALES ENGINEERS

£10-£15K

Video & Data Display Terminals

The KGM Group, already well established as a leading manufacturer of CRT video and data display equipment, is about to introduce significant new products in the field. Experienced Sales Engineers are needed to join us in our continuing success. If you are of the calibre required to justify high rewards based on a substantial salary + bonus + an exciting "double-bonus" scheme + 2-litre car, then contact me immediately.

John A. Roberts
Group Marketing Manager

KGM ELECTRONICS
LIMITED

ELCK TOWER ROAD, BLEWORTH, MIDOX

ANALYST PROGRAMMERS

WEST OF LONDON to £8,000

One of the world's foremost computer manufacturer's is currently seeking career minded talent with experience of or interested in Transaction Orientated business systems. Development will be supported by the company's own T.P. monitor and database system. Candidates should have a sound commercial background and a good working knowledge of Cobol. This is without doubt a promising career move, with a company whose innovations are held in high esteem world wide. For further details please quote ref. CW225.

TECHNICAL AUTHORS

HOMER COUNTIES Salary to £7,000

We have a varied selection of openings for technical author's throughout the home counties. These appointments are all with major computer manufacturers and therefore require some previous experience in the production of technical specifications and software manuals. If you would like further details on any of these appointments please quote CW 226

Edmund Howard & Partners
COMPUTER PERSONNEL CONSULTANTS

Tel-01-399 9183

5 BRIGHTON ROAD SURBITON SURREY ENGLAND

REAL TIME PROGRAMMERS

UK & OVERSEAS - £ DEPENDENT ON LOCATION

Take advantage of our position as one of the leading recruitment specialists in the field of scientific programming. Today, more than ever, there is a demand for highly skilled personnel with the ability to tackle wide ranging projects in the design and development of scientific computer systems. If you hold a degree in a scientific discipline or have relevant practical experience of real time mini computer systems, using either ASSEMBLER, BASIC + MACRO 11, CORAL or FORTRAN then give us a ring quoting ref. CW228.

SYSTEMS ANALYST

DUBLIN £6-£7,000

THE COMPANY is one of Ireland's long established and most progressive consumer goods manufacturer, based on the outskirts of South Dublin.

THE D.P. DEPT is a small and friendly unit having recently upgraded its hardware to an ICL 2903, utilising JCL and plans to install T.P. in the near future.

THE APPOINTMENT requires an Analyst who is competent in all aspects of analysis as well as being able to supervise a small team and deputise for the D.P.M. in his absence.

This is an excellent opportunity to join the team at an extremely interesting stage of development, allowing the selected candidate to broaden and contribute his or her skills within a rapidly changing environment. For further details please quote CW227

BUSINESS SUPPORT PROGRAMMERS

LONDON & THE SOUTH SALARY £5,000-£8,000 +

A leading London based consultancy currently requires business minded programmers with a minimum of two years' commercial programming experience. Applicants will be expected to become involved in areas above and beyond normal programming duties. These will include customer liaison and sales support as well as working on client premises periodically. Candidates should possess a pleasing and forthright manner and demonstrate the potential to develop into fully fledged consultants. For further details please quote CW229

Secretaries
Demonstrators

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or Jenny
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"Go INMOS young man"

WHAT?

INMOS is the new semiconductor venture set up to compete in the world market for advanced VLSI devices.

INMOS is establishing design and marketing activities in the UK and the US, with a prototype facility in the US and the main production centres in the UK.

INMOS is developing two micro channel MOS technology which will be used to create the standards for the next generation of memory and microprocessor components.

WHERE?

INMOS is establishing its UK Technology Centre at Bristol. This Centre will have responsibility for developing new products with the primary emphasis on microprocessors.

At the same time INMOS is establishing a US Technology Centre to develop memory components. The Technology Centres have been chosen with care to provide the best possible environment for the supervisors we want, with the attractions of beautiful countryside, city life, good schooling and a wide variety of housing at acceptable prices.

There are opportunities at both the UK and the US Technology Centres and interchange between the two Centres will be encouraged.

WHO?

At Bristol, INMOS is recruiting a design team to conceive a new microprocessor philosophy for the standard system component of the 1980's.

INMOS wants MOS process and design engineers to develop basic technology. Computer architects to create a component that is programmable and connectable, and Software designers to evolve the language and compilers to turn that component into a system.

The work involves innovation in design, architecture and software, and INMOS wants people who can make a contribution at all levels, from design superstars and managers to junior staff with potential.

HOW?

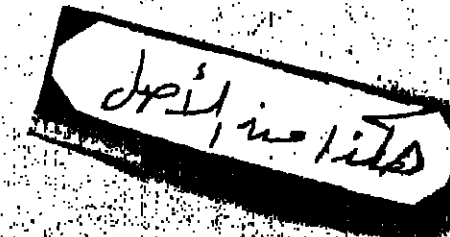
We want the best Men and women who can contribute to the leading edge devices which will establish INMOS as a major force in the semiconductor industry.

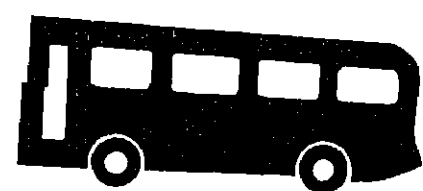
We offer the most The opportunity of a new Company, the pleasures of the West Country, the satisfaction of good rewards, the challenge of the future.

Write NOW for more information and an application form to: Iann M Barron

INMOS Limited
Whitehairs,
Lewins Mead,
Bristol.

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Stop



Computer

Special

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Greater Manchester Passenger Transport Executive is the largest passenger transport operator outside London, serving 2½ million people and covering 500 square miles. It was one of the first with new ideas like bus lanes and Dial-a-Ride. The Systems and Data Processing Department is now undergoing a major expansion. As part of the team, you could play a vital part in guiding the ambitious projects aimed at shaping the transport needs of tomorrow, using an IBM Mainframe OS/MFT with ENVIRON-1 and TOTAL, and a newly acquired DEC PDP 11/70 with TRAX.

SYSTEMS DESIGN MANAGERS To £8,500

To lead multi-disciplinary project teams, introducing advanced systems throughout Greater Manchester Transport and to support existing operational systems.

SENIOR PROGRAM DESIGNER To £7,200

To provide expertise in programming technology for application programmers working in COBOL and FORTRAN.

SENIOR SYSTEMS DESIGNERS To £7,500

To ensure that assigned projects are completed to time and cost targets and are consistent with the systems development plan, the needs of user departments and the systems quality standards.

PLUS!

We also need systems designers, program designers and design assistants. Ring or write for details and an application form.

OVER AND ABOVE YOUR SALARY...

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By rail, to and from work, by bus at all times, including weekends: a saving that could be worth hundreds of pounds per year.

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Manchester and its satellite towns offer some of the finest shopping outside London. NALGO membership brings you privileges like discounts over a very wide range of goods and services, including car hire and petrol!!!

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Some of Britain's most beautiful country is within easy reach, including the Lake District, Peak and Snowdonia national parks.

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There's a very lively sporting scene, including cricket (Old Trafford), soccer, rugby, tennis, squash and golf. Real beer, thriving clubland, home of the Halle.

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No shortage, and it's possible to live on the edge of the country only 10 miles from the City centre. Guide prices: flats or 2 bedroom house £8K, 4 bedroom house £18K. We give you generous help in moving: up to £750 to cover the sale of your old house and purchase of the new temporary lodging allowance, time to house hunt, etc.

How to apply

Write to the address below with your curriculum vitae or for further details ring Mr W F Dryman, Systems and DP Department Manager, on 061-273 3322.

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Manchester
Transport

The Recruitment Manager
GREATER MANCHESTER PASSENGER TRANSPORT EXECUTIVE
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D/Chief prog — IBM — ASS — COBOL
Prog — 2900 — COBOL
Prog — IBM Sys 3 RPGII
Prog — IBM COBOL — 2 yrs
Progs Basic & Cobol
Ch/Prog — ICL 2903
Progs — PDP11 — PDP8 — Basic
Progs — Basic

£Neg
£5K
£Neg
£3½-5K
c£4½K
£5K
£4½K
c£4½K

Anal/Prog — Univac — COBOL
Anal/Prog — 1900 — Sys Design
Syst/Prog — 1900 — COMMS MGR
Analysts — 370/138 — DOS/VS — CICS
Bus/Sys Anal
Syst/Supp — Univac
Syst/Anal — 2903
Analyst — PDP11/-8

£4-5½K
£5.3K
£Neg
£5-6½K
£6 + K
£5 + K
c£5K
£Neg

YORKS & NORTH EAST

Prog — ICL — RPGII — COBOL
Prog — Level 64 — GCOS — IMS — COBOL
Prog — 370/125
Prog — 370/138 — COBOL
Progs — 1904 — GEOLII
Progs — 1 yr. — COBOL

£Neg
£4K
£Neg
£Neg
£3½-5½K
c£4K

Syst/Anal — IBM
Prog Mgr — DEC 11/34
Tech/Anal — DEC 11/34
Syst/Anal — 1904
Syst/Progs — IBM — Ass — OS/VS1
Snr/Syst/Anal — 2 yrs Sys Des — COBOL

£5½K
£5-6K
£5-6K
£5-6K
c£6K
c£6K

LANCASHIRE

Progs — 18 months — Honeywell — COBOL
Progs — IBM — COBOL
Progs — Level 66 — COBOL
Progs — IBM — 2 yrs exp
Progs — NCR 8250
Progs — HP or Systime

£Neg
£4 + K
c£4K
£Neg
c£4K
£Neg

Tech/Prog — Database — Fortran
DPM — Systime — Basic — RSTS
Syst/Anal — 3 yrs — 1900
Analysts — IBM — COBOL
Anal/Progs — CICS — DL/1
Snr Progs — 2 yrs — COBOL

£4½K-6K
£Neg
c£6K
£Neg
£Neg
c£4½K

MIDLANDS

Jnr/Prog — ICL — COBOL
Progs — IBM — Sys 3 — RPGII
Progs — 12/18 mths — Ass
Progs — PL/1
Progs — 370 — COBOL — CICS

£3-3½K
£Neg
£4-5K
£Neg
£Neg

Analyst — IBM Sys 3 — RPGII
Anal/Prog — Local Govt exp
Snr/Prog — ICL — 3 yrs exp
Progs — 1900/2900 — 370
Progs/Anal — 1900 — COBOL

£Neg
c£7 + K
£5-6K
£4½K
£Neg

SCOTLAND

Progs — ICL 1900 — COBOL
Syst/Anal — Manuf or Financial
Progs — IBM — PL/1 — Ass — COBOL
Syst Anal — ICL — COBOL

£Neg
£Neg
£Neg
£4½-5K

Syst/Supp — Sys 10/2903
Syst/Prog — 370/158
Prog/Anal — 380/50 — 370/158
Analyst — Prog. Background — 2/3 yrs — COBOL

£4-6K
£Neg
£Neg
£Neg

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These are as ever exciting days in data processing in Black & Decker which is a fast growing and very profitable company with an outstanding record of sales and profits growth - three-fold increase in the last five years despite the general major economic difficulties.

D P FACTS

- * ICL 1903T and 2903
- * New Hewlett Packard HP3000 distributed network (installation commencing Spring 1979).
- * Database, communications networks, powerful software aids.
- * Ultimate linking of network to Black & Decker companies world wide.

STAFF REQUIRED

- * Systems Analysts who should have a wide experience in commercial systems design and implementation. Some experience of data base design would be advantageous.
- * Programmers who should be experienced in COBOL/ASSEMBLER. Ideally experience of MPE, VIEW and QUERY would also be useful.
- * Systems Programmers with good software experience.

The opportunities are outstanding and salaries will match the experience of successful candidates. Even if you feel your experience may be limited don't let that stop you. The company set great store by enthusiasm and commitment. Interested candidates should contact Ivor Norton by telephone or in writing at the London office quoting reference CW/79007.

Ivor Norton Management Services Ltd

Recruitment Consulting Division

52 Shaftesbury Avenue, London W1V 7DE. 01 734 8862 (Day or Evening) P.O. Box 63, Copthall Tower House, Harrogate HG1 1TS. Tel: Harrogate 66628

Hardware Engineers: a chance to get into Software too!

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This international company is anything from a neck to streets ahead in microprocessor communications. Now two more Hardware Engineers — 1 and 2 above — are required for design work.

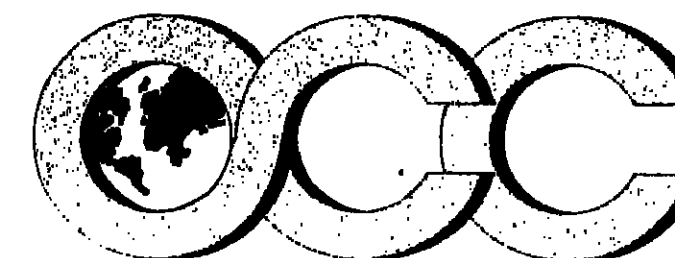
But, since this work will also involve software, the Company is prepared to train you for it — with the aim of developing you into a Systems Engineer.

A degree or an equivalent qualification in Electronic Engineering is essential. So is experience in communications or computer interfacing — although not necessarily on minis: could be main frame.

Both positions entail some overseas travel. Benefits, whether you're appointed to Croydon or Switzerland, are excellent.

To apply, please ring Beryl McLaren on 01-836 9719 or 9882.

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Specialists since 1971 in UK and International computer appointments. We have many vacancies in the UK and throughout the world, apart from those shown here, and we also offer a free career counselling service to computer professionals.

COBOL Programmers £4,500 - 5,000

- N.W. Kent—excellent relocation package
- 1 years + experience on ANY hardware
- Train on IBM OS COBOL
- IBM 3031 installation

We wish to recruit programmers for the Data Centre of an international organisation which provides DP services to group companies in the U.K. and Europe. Teams of analysts and programmers are working on new developments (including TP and Database applications), troubleshooting, maintenance and enhancements. The hardware is an IBM 370/158 being replaced soon by an IBM 3031.

Candidates should have a minimum of 1 year's experience of COBOL on any hardware. PL1 experience would also be acceptable. Full training on IBM OS COBOL, JCL, etc. will be given.

The Centre is housed in excellent offices in the country where the atmosphere is relaxed and friendly, although high standards are expected. Benefits include flexible working hours, subsidised canteen, sports and social clubs, etc.

To apply, or for further information, please write or phone, asking for Neville John quoting reference 244/CW. Day: 01-242 9356. Evenings and weekends: Farnborough (Kent) 52880.

OCC Computer Personnel Ltd,
16 Bedford Row,
London WC1R 4EB
Tel: 01-242 9356
Telex: 21120



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Intel are establishing their European Central Repair Centre near Reading shortly and are looking for really experienced trouble-shooters.

The successful applicants will show that they have a flair for their work and must be capable of efficiently tracking down faults to the component level. A good background in computer or digital system service is essential and a knowledge of peripherals would be a definite advantage.

We invented the microcomputer and are offering challenging service positions which will command good salaries and above-average fringe benefits.

If you would like to take advantage of this opportunity or feel that you have the necessary experience, why not write now to Dave Perks at Intel, giving details of your career to date.

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Tel: (0865) 771431

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If you fill the above requirements or consider yourself suitable, let us find you a job with a minimum of \$A16,000. Stay 6 months in the position and we will refund your own economy fare to Australia in cash! If you have already arranged assisted passage or emigration of an Australian wishing to return home for free we will refund the equivalent of your own economy fare in cash after the qualifying period.

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Send your detailed resume and references now to:

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75 KING STREET, SYDNEY, AUSTRALIA, 2000
TELEPHONE (02) 29 1016

Secure Success in Staines!

We have been exclusively retained by an internationally respected Manufacturer of Computer Peripherals, who is committed to developing solid career paths for Data Processing Professionals and is NOW seeking to strengthen the in-house team with the following key appointments:

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3 years Programming experience with a minimum of 12 months RPG II. Knowledge of CCP/CICS plus Systems Experience on IBM equipment would be an advantage. Excellent ON-LINE opportunities to DP Management and eventually general management. Relocation expenses will be paid.

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1 year RPG II on IBM System 3 Model 10 (48K), soon moving to series I5D (160K).

Programmer c.£4,000

Ideally a numerate Graduate with D.P. theory to train up.

Candidates should possess a high degree of self-motivation to help develop the financial, marketing and inventory programming systems. In return the company offers excellent fringe benefits and pleasant working conditions. Telephone Bob Williams, Guildford (0483) 65566 or Mike Reedy, Windsor (07535) 54256 for an early interview or write to:



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Recruitment Selection & Advertising Consultants
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The starting salaries range from £3,500 to £5,000 for a 37 1/2 hour week with a Salary Review in May.

Give yourself and your family the opportunity to improve your life style by ringing your nearest ATA Computer Recruitment Office or alternatively write enclosing a résumé of your career to date to Ian Baker.

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BIRMINGHAM (021) 643 1994
Equity and Law Building, 102 New St.
B24HQ

BRISTOL (0272) 211035
Equity and Law Building
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EDINBURGH (031) 226 5381
Anglia House, 24/26 Frederick St.
EH2 2JR

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(Salary £847 17554 inclusive of
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Applicants should have proven technical ability in a wide range of computer operations.
This is an opportunity for a manager to develop his/her skills in an educational environment.
Application form and further details from the Establishment Officer, PCL 309, Regent Street, London W1R 6AL (Tel 01 580 2020 ext 212).

COBOL PROGRAMMERS

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Superb opportunity to join small dynamic team. Excellent salaries and conditions. Interesting, challenging, varied work. Full-time or part-time / Freelance.

Telephone: Knutsford 53417
or 081 236 9751

Designers · Programmers · Operators

Doing anything next Wednesday?

Why not come along and have a chat with us over a drink — anytime between 4.00 and 7.30 pm on Wednesday 24 January. We are seeking staff to develop and run computer projects covering a wide range from new research to the support of operational systems.

We use a Honeywell Sigma 6 with 512KB of core and 490MB of disc storage. The 40 terminals on line include VDU's, teletypes, laboratory instruments and optical mark reading equipment. A Prime 300 with 256KB of core and 80MB of disc storage is linked to process pathology data. An extensive communications network is being planned.

The operating systems support concurrent batch and time sharing work. Languages used are Fortran, Cobol and Coral. Program development is generally performed on-line.
So, if you are interested come along next Wednesday. The Sharpey-Scholar Centre is within walking distance of Waterloo and Westminster stations, and is signposted alongside the Westminster Bridge and off St Thomas' Hospital.
If you can't make it, write for further details to Maureen Johnston, Sharpey-Scholar Centre, St Thomas' Hospital, Lambeth Road, London SE1 1 or ring 01-228 9292, Ext 2370/2283.

Senior Programmer (F.76)

Up to £6180 inclusive (grade AP5-SO1-2)

For this newly created key position we are offering:

Initial salary in excess of £5500 (where experience justifies), with increments annually to the top of the grade.

Placed offices conveniently situated for the Sussex countryside, coast and London.

Flexible working hours (shortly to be introduced).

Applicants should have at least 3 years' programming experience including some COBOL and will be required to lead the Programming Team in this expanding and progressive installation.

Duties will include an involvement in Systems Design and a responsibility for maintenance of programming standards.

The Council has recently taken delivery of a Honeywell 64-20. A number of interesting developments are being planned including the introduction of on-line facilities.

PLEASE WRITE OR TELEPHONE FOR JOB DESCRIPTION AND APPLICATION FORM TO THE PERSONNEL OFFICE, TOWN HALL, CRAWLEY, WEST SUSSEX RH10 1UZ. TELEPHONE CRAWLEY (0283) 28744. EXT 122 (24 HOUR ANSWERING SERVICE). CLOSING DATE: 31st JANUARY 1979.

CRAWLEY

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FURTHER YOUR CAREER IN COMPUTERS

If you have a minimum of one year's data control experience involving all aspects of job assembly and disassembly, we have a position of CONTROL ASSISTANT, preparing run sheets, and liaising with user departments.

Two shift basis, 0800-1800 hours / 1500-2300 hours on Friday.

Commencing salary on a career grade, according to experience, eventually rising, upon recognised proficiency, to a maximum of £8,000 per annum (inclusive of London Weighting, Supplement and Shift Allowance).

For application form please telephone 01-831 6055 or send to: Chief Executive, London Borough of Croydon, Euston Road, London, NW1 2RU, stating your number 16/15.

Equal opportunity for all.

Applicants are encouraged to send their CVs for the post registration at our 100% job security. Please register your interest with us by sending a stamped addressed envelope to: Croydon Borough Council, Euston Road, London, NW1 2RU.

PROJECT LEADERS / ANALYSTS

London Based

to £8,500

Due to the planned expansion of a Computer Services Organisation with offices in the U.K., Middle East and Africa, D.P. Professionals are required to join their international team based in London.

The posts are open to people with a minimum of 3 years' commercial experience. A programming background is a pre-requisite together with experience of designing and implementing at least one system.

The company is actively engaged in the development of on-line, real-time systems for clients within the U.K. and overseas on both mini and mainframe machines. They offer opportunities for overseas assignments and a wide and varied scope for career development.

Ref: 3/1

COBOL PROGRAMMERS

Holland

to £15,000

Opportunities exist within this D.P. Consultancy for all levels of mainframe COBOL programmers to develop their potential to the full. At least 2 years' COBOL programming experience is essential and a degree is preferred.

Successful candidates will have the opportunity to work on a variety of commercial and financial systems with excellent career prospects.

Ref: 3/2

PL1 PROGRAMMERS

Herts

to £5,750

This well-established financial organisation offers excellent career opportunities for ambitious programmers to work in an on-line / database environment.

The minimum requirements are for people with 12 months' commercial programming experience, preferable on IBM equipment. Training in PL1 will be provided. The company offers excellent employment conditions including no-contributory pension scheme and loans / mortgage subsidy.

Ref: 3/3

COMMERCIAL PROGRAMMERS

London

to £6,500 + bonus

A leading U.K. software and service organisation urgently require IBM / ICL Mainframe COBOL programmers to work on development projects for clients throughout the Greater London area. The minimum requirement for these challenging positions is 18 months' COBOL experience.

Successful candidates will be expected to work to fixed scales and will have the opportunity for work overseas.

Ref: 3/4

ANALYST / PROGRAMMERS

City

to £7,500

These positions offer a first-class opportunity for programmers with a minimum of 3 years' commercial mini-computer experience in Basic or Fortran IV to develop and install financial systems in a stimulating environment. Our client, an established city organisation, is primarily concerned with real time, on-line and communications systems. Training will be provided for suitable candidates.

Ref: 3/5

PROJECT MANAGERS

Berks.

to £8,000+

An established bureau / software house specialising in commercial applications on mini-computers require 2 Project Managers with experience of accountancy or production control and an assembler programming background.

These positions are based at the company's new southern division headquarters, and offer an index-linked salary together with first-class promotion prospects in the U.K. and overseas.

Ref: 3/6

SENIOR ANALYST

Saudi Arabia

At neg. tax free

An expanding IBM bureau is seeking an Analyst to assist in the development and marketing of financial / commercial systems and associated software products. The successful candidate will have an IBM programming background, preferably with knowledge of OS, TOTAL and ENVIRON.

He will be a self-starter with a high degree of professionalism, capable of working to tight deadlines. An excellent remuneration package is offered.

Ref: 3/7

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Haven Informatix Limited

24 Grays Inn Road London WC1X 8HR Telephone 01-831 6055 Telex 299539 HAVEN G

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Looking for hands-on mini experience in an exciting environment?

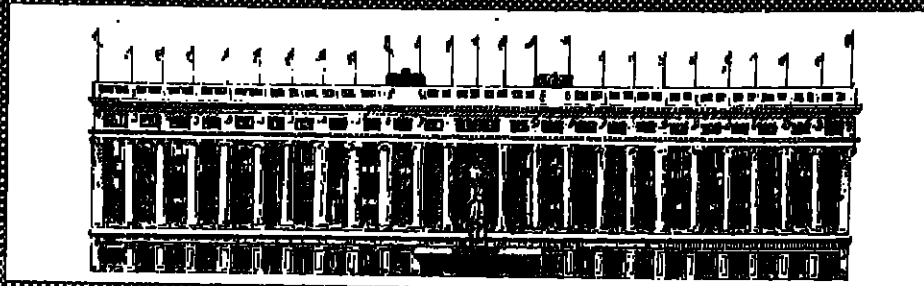
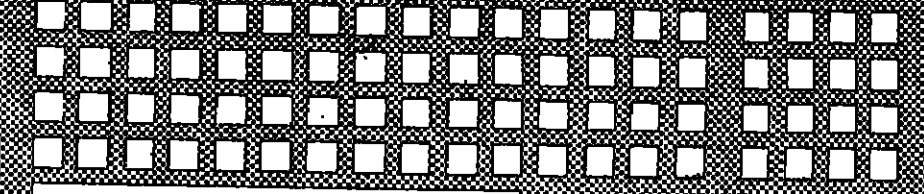
We are starting new projects in the fields of process monitoring and control using mini-computers and require young programmers, male or female, with potential and ambition who wish to gain valuable experience in real-time computing.

If this appeals — irrespective of your previous experience — DON'T HESITATE! Ring Kevin Perrins now on 01-953 2030

extension 3208, or write to H.E. Batchelder, Marconi Avionics Limited, Elstree Way, Borehamwood, Herts. Please quote ref. no. 79004.

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PROJECT MANAGER c. £7500**SYSTEMS ANALYSTS c. £6500**

Try Selfridges for Europe's top POS jobs- and a lot more besides.

No matter how many DP jobs are advertised in the specialist press, it's never that easy to find something that's really exciting, really distinctive. Having said that, we think you're bound to agree that the opportunities we're about to describe are quite outstanding in their field.

Selfridges, Oxford Street's no. 1 store with an annual turnover in excess of £100m, have in hand a DP project of the first magnitude - the introduction of point of sale terminals throughout the store. Easily the largest exercise of its kind ever undertaken in the UK, it will also be the largest system of its kind in Europe - in fact, it's the single exception of New York's Macy's, in the world.

A seven figure investment in hardware will consist of about 200 terminals feeding into a concentrator, in turn feeding into a mainframe computer.

And we want the first stage - covering a third of the store - to stream by the end of the year.

For Selfridges, the advantages will be almost limitless: sales will be reduced from over a week to under an hour, inventory will be considerably tightened, and, looking to the future, impact will inevitably be substantial in many other key areas.

As stock control.

For the small team of DP staff involved, the advantages will be equally massive. Salary for the Project Manager - who will be complete charge of the project from liaising with manufacturers to ensuring the correct scheduling of training programmes - will be negotiable around £7500, while the three

Systems Analysts will start at around £6500 in addition to these salaries, the renowned Selfridges benefits scheme includes big discounts on most purchases, 4 weeks' paid holiday, subsidised restaurant, medical and dental facilities, interest-free season-ticket loan, and generous pension scheme. Besides all this, career prospects are excellent, as a number of other major DP developments are in the pipeline.

The Project Manager

aged at least 32, should have a minimum 4 years' experience including total project responsibility for at least one medium or large-scale operation. Experience in supervising systems analysts, a knowledge of budgetary control and systems audit, and the ability to liaise effectively with manufacturers and contractors are key requirements.

The Systems Analysts

aged at least 25, should have a minimum of 2-3 years' all-round DP experience, including an element of practical experience with commercial and financial systems.

In all cases, any training in point-of-sale will be provided as required.

If you're impressed by the challenge - and the rewards - Selfridges have to offer, please write with full personal and career details to: M. F. Howard, Personnel Department, Selfridges, Oxford Street, London W1A 1AB. 01-629 1234.

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informatics inc



Analysts & Programmers to £10K

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Project Leader Potential?

Snr. Analyst

To £8,000

Snr. Analyst/Programmer

The Chevron Group of companies is probably best known in this country as the operating partner of the major Ninian Field in the North Sea. What is less well known is that over the last 5 years the worldwide group showed the largest growth in sales of any of the international oil companies and that over the same period only 3 companies managed a better return on total capital. 1977 saw a worldwide turnover of almost \$22 BILLION. So there in a nutshell you have the Chevron picture one of GROWTH, OPPORTUNITY, and SECURITY.

Chevron Oil Europe have recently relocated to Central London with computer facilities on the continent based on an IBM 370/158 A.P. operating under MVS and using IMS. There are RJE and TSO links throughout Europe. The multi-national applications group based in London which is responsible for new Europe-wide systems and the on-going activities for existing systems is now looking for additional team members.

WHAT DOES THIS MEAN TO YOU? In one word OPPORTUNITY. You will be joining a growing team, part of a major data processing set-up. It will be necessary to deal with users throughout Europe and there will therefore be opportunities for travel.

WHAT DO YOU NEED? You should be a senior analyst or analyst/programmer with a COBOL and commercial systems background. Your experience to date should include a good understanding of complex paper flow accounting systems. You must, of course, be able to communicate well with users with a variety of backgrounds. Relevant technical experience would also be valuable. You must have the ability to become a project leader in a relatively short time scale.

The working environment and conditions of employment are excellent. To find out more about these positions telephone our CROYDON office or write quoting reference: CW 102-9H.

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Systems Analysts

£5,500-£8,500

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Similar to many companies, we are looking for systems analysts. The difference is that we require people capable of developing major sophisticated systems, implementing them throughout Western Europe, using the latest mainframe and terminal equipment. Our Client, a major multi-national Group, requires ambitious young people capable of responding to a demanding environment, communicating effectively and yet retaining a mind for detail.

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- the backing of a multinational group offering both formal and on-the-job training leading to early promotional prospects.

We require:

- one to eight years' experience of system analysis, ideally with a knowledge of on-line systems, minicomputer application or I.B.M. mainframe
- a sound track record and knowledge of programming
- an agile mind capable of assuming early budgetary responsibility and project management

Ring today and arrange a fully confidential meeting at one of our regional career guidance evenings, or before if necessary.

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Mel Cayzer, B.Sc (Econ.), C.Eng., M.I. Mech. E., M.I. Prod. E.,
Ref: 873, Barnett Keel Ltd., Providence House,
River Street, Windsor, Berks. SL4 1QT.
Tel: Windsor (07535) 56723. Telex: 849323.

Barnett Keel
MANAGEMENT SEARCH

John, in 10/10

COMPUTER OUTPUT MICROFILM SALES SPECIALIST

Required by Agfa-Gevaert Ltd., in our rapidly expanding COM operations, based at Brentford, Middlesex.

The successful applicant will sell an exciting new range of COM Recorders and Systems and will earn a high income for on-target performance.

Only sales professionals need apply and should preferably have experience in selling computer peripherals. Knowledge of COM is desirable but not essential.

Company car, generous allowances and large company benefits.

Phone the Sales Manager, COM Department on 01-568 3111 for more information, or write to:

AGFA-GEVAERT

Agfa-Gevaert Limited,
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Brent House,
950 Great West Road,
Brentford, Middlesex.

BUTTERWORTH

COMPUTER SERVICES MANAGER

Butterworth, one of the largest UK book publishing houses specialising in legal, scientific, technical and medical books, wish to appoint a Computer Services Manager at their offices in Kent.

This is a new post heading a small team of analyst programmers and will be principally concerned with the development and maintenance of the new interactive system based on a PDP 11/70. The main applications are for the order processing, distribution and financial systems but extensions into other areas are being considered.

Applicants should have a thorough knowledge of programming and some systems analysis experience. A working knowledge of a PDP 11/70 installation and familiarity with BASIC would be added advantages.

Salary will be based on experience, but will not be less than £7000.00 per annum with 5 weeks' holiday.

Please write, explaining how you think you can fulfil the requirements of the job and enclosing a detailed C.V., to:
Miss Val Weston, Personnel Manager
BUTTERWORTH & CO. (PUBLISHERS) LTD.
Barnard, Borough Green, Nr. Sevenoaks, Kent.

PROGRAMMERS STEP INTO ANALYSIS

ANALYST/PROGRAMMER

TO £6250

BUCKINGHAMSHIRE

If you have a minimum of two years' commercial programming experience using COBOL and are keen to...

- * Gain IBM experience on a 370/158 under MVS.
- * Develop analysis skills.
- * Be responsible for design.
- * Develop team leading skills.
- * Receive training in database design, using IMS.
- * Work with on-line real-time applications.

with a Company offering:

- * Excellent starting salary.
- * Five weeks' holiday.
- * Staff restaurant.
- * Relocation expenses.
- * Rapid career progression.
- * An active sports and social club.

This Engineering Company, situated 20 miles from London, offers an excellent career as a member of a professional systems and programming team currently developing a wider variety of applications to meet the system requirements of the business well into the 80s.

Ref. 1/1801

MYRIAD APPOINTMENTS LIMITED Computer Personnel Consultants
Telephone or write to:- 30 Fleet Street London EC4Y 1AA 01-353 0981 (24 hrs)

Bolton/Bury Computer Unit

Applications are invited for the following position within the Computer Unit situated in the Town Hall, Bolton.

OPERATOR

(Salary Scale C2.3 £2,987/£3,621 + £312 supplement + Shift allowance)

Candidates should be suitably experienced operators, willing to become actively involved in a programme installation working normally on a 5-day two shift system. Experience of George 3 would be an advantage, although training will be provided.

The Joint Computer Unit provides the data processing requirements for both Bolton and Bury Metropolitan Borough Councils with a combined population of approximately 440,000. The hardware which is currently being reviewed, comprises ICL 180K 140311 under George 3 supporting a number of key and remote terminals, including 2142 and 7503 RJE systems. Input is provided by Bolton Key to Disc equipment.

Application forms from the Personnel Officer, Town Hall, Bolton. Telephone 22311 Ext. 587 to be returned by 28 January, 1979.

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

SOFTWARE PEOPLE

London & Home Counties £4-10K

Our client is currently seeking programmers and analysts with solid experience on any major international mini or micro, such as DG Nova, PDP11, GEC 4000 and Intel 8080 series.

Professionals with practical experience of systems software work in the areas of I/O handling, disc monitors, assemblers, or high level compilers will be especially interesting, as would people with industrial systems experience on minis or micros.

Programmers with specific experience of BASIC, or IBM 5110 machines, and comms people with an understanding of interface software, protocols, concentrators, emulators, etc. would be of particular interest.

No matter how little or how much your assembler and software experience, why not discuss your situation with me.

Contact Derek Pearson

Suit 201/6, Albany House, 324 Regent Street, London W1R 5AA. 01-637 9611

THE BIG QUESTION

- ? Do you have expertise in MACRO, CORAL, FORTRAN, or ASSEMBLER
- ? Have you any experience of Real Time Systems
- ? Are you or could you be a Systems Designer, or Systems Engineer, or Programmer on minis and micros
- ? Have you a computing or electronic degree
- ? Are you worth between £4K and £7½K
- ? Do you want to live in a rural area of England

If you score more YES than NO
contact Derek Pearson to evaluate your future

MANAGEMENT & EXECUTIVE SELECTION

Computer Appointments

ANALYST/PROGRAMMER

WINDSOR

c. £6,000

Our client, leaders in the field of COM equipment and a subsidiary of a well-known American-based company, have an urgent requirement for an Analyst/Programmer. Their Data Processing systems are designed around Microdata Reality hardware installed in Windsor, Paris and Frankfurt.

Applicants who can offer

- * Around 2 years' D.P. experience, preferably with some background of Mini based systems.
- * A working knowledge of Basic, although training will be given to applicants conversant with other similar languages.
- * Capability to work on his/her own initiative.
- * Effective communication skills.

In return, can expect

- * A realistic salary
- * Pleasant location
- * European travel
- * Exposure to Real Time techniques
- * 4 weeks' holiday
- * Relocation, if applicable
- * Diverse applications development
- * Sport and social club facilities

If you are interested, then don't hesitate — contact Ron Oake on 01-629 7262 right away.

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CORNWALL

County Council

Computer Installation

In an expanding development section a vacancy has arisen for an experienced

Cobol Programmer

£3,300 - £4,600 p.a.
(Salary at present under review)

Enthusiasm and a good knowledge of I.C.L. software are prerequisites for this post and payroll experience would be an advantage.

The County Council has a 128K ICL 1904S operating under GEORGE 3 with an extensive communications network providing users with facilities varying from RJE to on-line enquiry systems.

Starting salary will take account of the successful applicant's experience.

Generous assistance will be given towards removal costs and other expenses: a flexible system of working hours is operated.

Application forms and further details can be obtained from The County Treasurer, Cornwall County Council, County Hall, Truro, Cornwall. Tel Truro 74282 ext 285.

Real REAL-TIME

Opportunities for
Programmers & Analysts
at salaries and fringe benefits to

£7000

are there for the asking.

Apply in the very strictest confidence for
an application form to



9-11 Tetton
Knutsford
WA16 6AB
Cheshire
Tel: 0565 400000
24 HOUR
SERVICES

Programming and Systems Ltd. Recruitment Consultants

United Merchants and Manufacturers
(U.K.) Ltd.
Newlay, Leeds LS13 1EF
require

D.P. MANAGER

The Company is advancing from an IBM System 3 Model 10 installation to an IBM System 34 installation. Applicants must thus have gained sound practical experience of systems analysis and programming in RPG II over a period of not less than three years. Duties will include responsibility for the day-to-day running of existing systems, development work and supervision of staff.

Salary will be related to experience and qualifications, with a Company car provided.

Applications giving brief c.v. are to be sent to: Mr. S. Dean, Company Secretary and Treasurer.



COMPUTER SERVICES SALES EXECUTIVE

Agricultural Database Ltd. (a member of the FMC Ltd. Group — turnover £500 million), supplier of computer services to the agricultural and food processing industries, require an experienced Sales Executive with wide experience of computer operations and the ability and drive to develop markets.

Preference will be given to applicants with a knowledge of the agricultural industry and a computer services marketing background.

The rewards for this important and progressive post will be substantial with a basic salary of not less than £8,500, a year and attractive incentive commission arrangements.

A Company car will be provided.

Applications with full particulars to: The Group Personnel Manager, FMC Limited, 19/23 Knightsbridge, London, SW1X 7NF.

PROGRAMMERS

c. £4,000 - £5,000
(Min. 1 yr experience)

The Central Electricity Generating Board's new Regional Headquarters are situated 1 mile from Harrogate town centre, in pleasant countryside, with extensive views over rural areas of North Yorkshire.

- NEW HARDWARE
- NEW DEVELOPMENTS
- RELOCATION EXPENSES
- OVER 4 WEEKS PAID HOLIDAY
- ACTIVE SPORTS & SOCIAL CLUB
- SUBSIDISED STAFF RESTAURANT
- EXCELLENT WORKING CONDITIONS

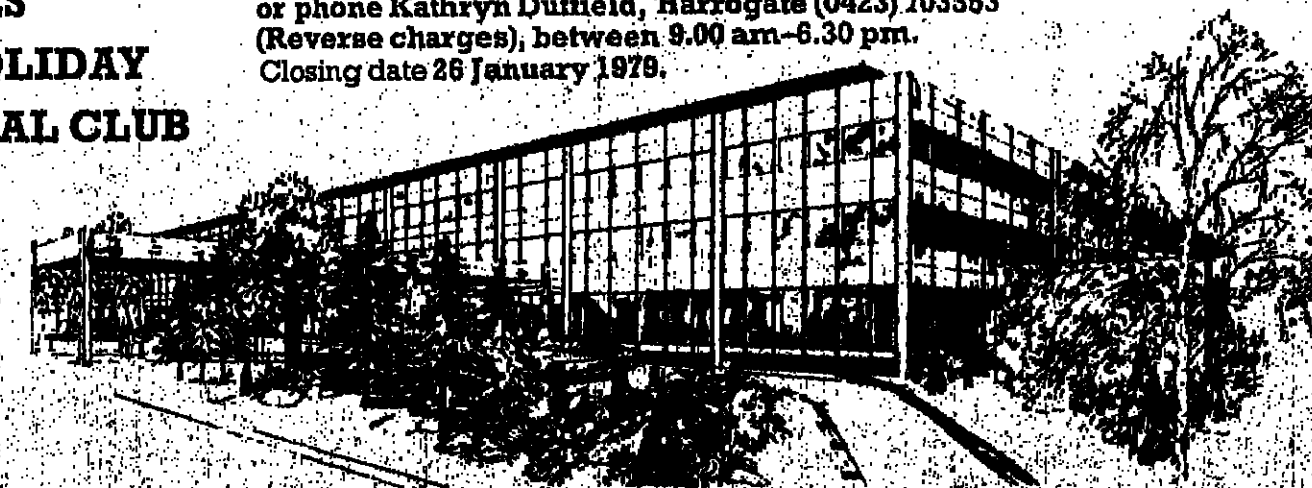
ANALYSTS

c. £4,700 - £6,000
(Min. 2 yrs experience)

In late 1979 a 24 megabyte ICL 2980 under VME/B, linked to the region's major Power Stations via a comprehensive communications network, will replace the existing 1904S. An extensive range of development work is being undertaken with emphasis upon on-line applications.

Interested? Then write giving details of age, qualifications, experience, present position and salary, to the Regional Personnel Manager, C.E.G.B. North Eastern Region, Beckwith Knowle, Otley Road, Harrogate HG3 1PS, quoting either reference SVN/2/CW (Programmer) or SVN/3/CW (Analysts).

or phone Kathryn Duffield, Harrogate (0423) 703853 (Reverse charges), between 9.00 am-6.30 pm. Closing date 26 January 1979.



Process Control and Micros

London/South East Start £5.5.k upwards

Men and women, with one to two years' experience of working with engineers on control applications and who are ready to extend their knowledge, are invited to discuss vacancies in the Software Division of PACTEL. PA International's current involvement with microelectronics includes:

- Process applications; oil production, pharmaceuticals, etc.
- Creation of greater awareness
- MicroSim; one of the world's leading software tools
- Training of engineers and programmers
- Product innovation; micrometers, petrol pumps, etc.
- Review of operating systems for microcomputers

Please write, or telephone for an application form, to Peter Andell, Micro Software Manager.

PACTEL

Rochester House, 33 Greycoat Street, London SW1P 2QF.
01-828 7744



A member of PA International

SMITHS INDUSTRIES LIMITED AVIATION DIVISION

have openings in their Research & Engineering Department which will appeal to Engineers who seek a challenging and rewarding vocation. If you are interested in any of the following fields:-

*DIGITAL HARDWARE/
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*ANALOGUE HARDWARE
*CONTROL SYSTEMS
(ANALYSTS & DESIGNERS-
FIXED AND ROTARY
WING AIRCRAFT)

*COMPONENT
APPROVAL

We have vacancies at various levels in these Design Branches:-

• FLIGHT DECK
INSTRUMENTS

• FLIGHT CONTROL
SYSTEMS

• TEST EQUIPMENT

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RESEARCH

• ELECTRONIC
DISPLAYS

• ENGINEERING
STANDARDS

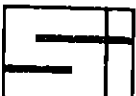
• MICRO ELECTRONICS

• COMPONENTS
ENGINEERING (GYROS &
ACCELEROMETERS)

• WEAPON SYSTEMS
(AVIONIC & NAVAL)

Applicants should have preferably a Degree with a minimum of two years' experience although relevant experience or other qualifications in lieu would be considered.

Write to
H. Upson,



SMITHS INDUSTRIES LIMITED

AVIATION DIVISION

Bishops Cleeve, Cheltenham, Glos. GL52 4SF.
or use our ANSAFONE facility: (0242-67-5359)

1900 Operator

No Shifts
Up to £3,700

We have a vacancy for an experienced operator in our small team, working on ICL 1903T computer, on a five-day week with normal office hours.

The department is busy and friendly, and situated in modern offices in the W1 area. Benefits include 4 weeks' holiday, LVs and interest free ticket loans.

Applicants should have about 1 year's operating experience, and knowledge of the George II system would be an advantage. However, operators with less experience are welcome to apply.

For application form or interview, phone Ann Dickinson on 01-580 1498.

Matthew Hall

MH

UNIVERSITY OF LEICESTER

COMPUTER OPERATOR

The Computer Laboratory has a vacancy for an experienced computer operator. The Laboratory provides the central computing services for the University and associated Medical School using CDC Cyber 72 with a wide range of peripherals and a campus network based on PDP11s. Knowledge of Control Data equipment would be a considerable advantage, but is not expected. Salary according to age and experience on a range from £3,074 to £3,774 with an additional £231 a year two-shift allowance.

Applications should be made to the Director, Computer Laboratory, The University, Leicester LE1 7RH. Telephone: (0533) 80000, extension 42.

TYNE AND WEAR COUNTY COUNCIL COUNTY TREASURER'S DEPARTMENT

COMPUTER PROGRAMMER

(Salary up to £5,073)

Applications are invited from experienced Programmers or from persons wishing to enter the programming field for the first time for this vacancy in the County Data Processing Section. The successful applicant will join a highly skilled and experienced development team working on a wide variety of financial, administrative and technical computer systems. The County Council operate an ICL 1904S computer with 192K core store; 11 EDS80; magnetic tapes and drums, which supports a communications network of over 60 terminals, used for on-line processing, data capture and MOP development. Written applications, stating age, qualifications, current salary and experience to date, and naming two referees, should be sent, not later than 15th January, 1979, to: County Treasurer, Tyne and Wear County Council, Belford House, Belford Terrace, Newcastle upon Tyne NE2 1BN.

OPERATORS

WORK LOCALLY IN WEST LONDON

IBM 370 Operators with a minimum of 9 months experience required for a number of interesting installations running both two and three shift systems. Salaries up to £4850 inc.

Vacancies also exist for experienced Terminal Operators, Data Controllers and Tape Librarians in and around London. Salaries to £4500 inc.

FOR MORE DETAILS CONTACT CAROL McGOVERN ON
01-836 6775

Computer Personnel International

110 St Martin's Lane, London WC2N 4BH 01-836 6775

IBM OS SEN. OP

£5800 +

Major international organisation

located in C. London requires Oper-

ator with approx. 4 years' expe-

rience to work on a 270-150, three-

shift prospect to Shift Leader and

planned upgrade to new range equip-

ment.

IBM OS JCL WRITER

£4750

Excellent "DAY'S ONLY" opportunity

for OS Operator to work with a major

financial concern in the City. The

successful applicant will be fully

conversant with OS JCL and Utilites

Sub. mortgage and bonus scheme

IBM DOS OPERATOR

£4750

12 months DOS VS experience is a

requirement for this City based bank

running a 270-150 on 2-shift system

Excellent benefits include sub. mort-

gage.

IBM DOS SEN. OP

£4500

Survey based commercial installation

requires Ops with a minimum of 18

months' experience to work on a

mid-range IBM 370 under DOS VS.

POWER VS. Good benefits.

IBM OS OPERATOR

£4800

Large international banking organisa-

tion in C. London requires an

Operator with approx. 12 months' ex-

perience for 370/148 Sub. mort-

gage and high annual bonus.

ICL TEAM LEADER

£6800

Mid two-shift operator - requires 18

months' experience to work on the

2700 hardware in West London

area. Two shift.

ICL SHIFT LEADER

£5000

And senior Operator required

urgently for equipment installation

with brand new 2700 and System 1

ST London two shift

ICL SHIFT LEADER

£5000

And senior Operator required

urgently for equipment installation

with brand new 2700 and System 1

ST London two shift

ICL SHIFT LEADER

£4800

And senior Operator required

urgently for equipment installation

with brand new 2700 and System 1

ST London two shift

ICL OPERATOR

£3800 +

Should be experienced on ICL 2700

hardware and be prepared to work

two shifts only. Good opportunities

band new installation "start-up" in

the London City area.

ICL JUNIOR OPERATOR

£3000 +

Is required for new installation with a

2700 computer situated in the West

London area. Two shifts to operation.

ICL JUNIOR OPERATOR

£3000

Required for large bureau with two

2700 machines, and a 2700 stand

training prospects offered. West Lon-

dun area.

SALES HOLLAND

£6,000 + 10%

SALES BELGIUM

£3,500 + 10%

World wide IBM based sales

company. Exp. req.

SYSTEMS ANALYST

£2000

Survey based, extensive inst.

development on line systems to 27

System 31 Porden scheme, Brix

Staff req. inst.

PROG ANALYST

£2000

Survey, 18 months' experience

on IBM hardware, 2700

Staff req. inst.

CONTR. PROG.

£2000

Survey, 18 months' experience

on IBM hardware, 2700

Staff req. inst.

PL1 PROG.

£2000

27 London, 18 VS 370 Data

base, inst.

PL1 PROG.

£2000

27 London, 18 VS 370 Data

base, inst.

PL1 PROG.

£2000

27 London, 18 VS 370 Data

base, inst.

PL1 PROG.

£2000

27 London, 18 VS 370 Data

base, inst.

PL1 PROG.

£2000

27 London, 18 VS 370 Data

base, inst.

South West Thames Regional Health Authority

OPERATIONS STAFF

Tooting, London SW17.

The South West Thames Regional Health Authority require additional operations personnel to be based at the Regional Computer Centre located in the grounds of the Springfield Hospital, Tooting, London SW17.

Computing, within the centre, is currently based on powerful ICL 1903T hardware, running under George 3, which provides medical, financial and management information services to a Region containing a population of some 3 million and over 150 hospitals.

A two-shift system is currently in operation and the successful applicants will work a basic 36 hour week.

SENIOR OPERATORS

£4496*

The essential requirements for these positions are around 3 years' George 3 experience, preferably in a medium to large installation, coupled with the ability to progress rapidly into a supervisory position.

OPERATORS

£3800*

These positions will be of particular interest to candidates with at least 12 months' George 3 experience and the desire to develop their professional skills in an expanding and dynamic environment.

For further details, phone Sylvia Lyons or Les King, up to 8.00 p.m. each evening, or write to:

Modern Computer Services Limited,
FREEPOST, London WC2N 5BR, 01-839 3351.

*includes shift allowance and London weighting.

Freelance
Contracts

MODEM

Permanent
Positions

Consultants in Data Processing

It's not much good
having a reputation
for hard work if
you're blind to
new ideas.



The Westinghouse Brake and Signal

Company has built up a worldwide reputation

for the quality of its wide range of electrical,

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foundation in 1981, our success has not only

been built on hard work but our ability to

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Software Professionals

We are looking for software professionals

male or female, at all levels to work on

advanced telecontrol projects, both in a

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installations.

If you've had practical experience of

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an attractive salary, plus the full range of

benefits associated with a progressive

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Find out for yourself exactly what we can

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Miss F. T. Cox, Personnel Officer,

Westinghouse Brake and Signal Company Limited,

Chippenham, Wiltshire

Telephone Chippenham (0249) 4141

extension 700

Westinghouse

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Executive
RECRUITMENT CONSULTANTS

Systems Analyst c. £5,750 Programmer c. £5,000

N.E. Kent Manufacturing Site

Aware of the significant contribution to be made by an effective DP department in a manufacturing environment our client has decided to increase both the number of staff and the capacity of the DP installations. New equipment to replace the existing 1901A is currently being evaluated.

THE ANALYST:

The successful candidate will work closely with the DP Manager in developing new systems, some of which have been identified, and reviewing existing applications. There is ample scope for creative work. Previous experience in a manufacturing industry is essential as is the ability to develop good user relations. Applicants should be familiar with COBOL. Ref: 17049/CW

THE PROGRAMMER:

The person appointed will have the opportunity of making a real contribution to the development of new systems in addition to revising existing applications. Candidates must have at least one year's experience as COBOL programmer, ideally gained in a manufacturing environment. The ability to establish good personal relations with a small team and to work with a minimum of supervision are essential. Knowledge of NICOL would be an advantage. Ref: 17050/CW

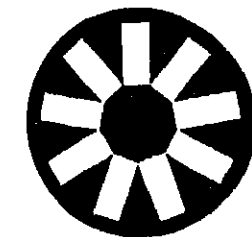
Career prospects are excellent both of these positions offering opportunities within the company and the group as a whole.

E. Sutton

These positions are open to male or female candidates. Please telephone or write for a Personal History Form to:

LONDON: 01-734 6852

Sutherland House, 6-6 Argyl Street, W1E 6EZ



Midshires Building Society is growing.

Which is why we need to expand our Computer Department.

Midshires was formed last year by the merger of two fast-growing and forward-looking Societies. Our assets are currently around £225 million - and growing. Our main frame installation has recently been strengthened by a Honeywell Level 64, and we are currently considering the installation of a real-time branch terminal network, using TDS and IDS II.

To realise these ambitious plans, we are looking for a:

Chief Programmer

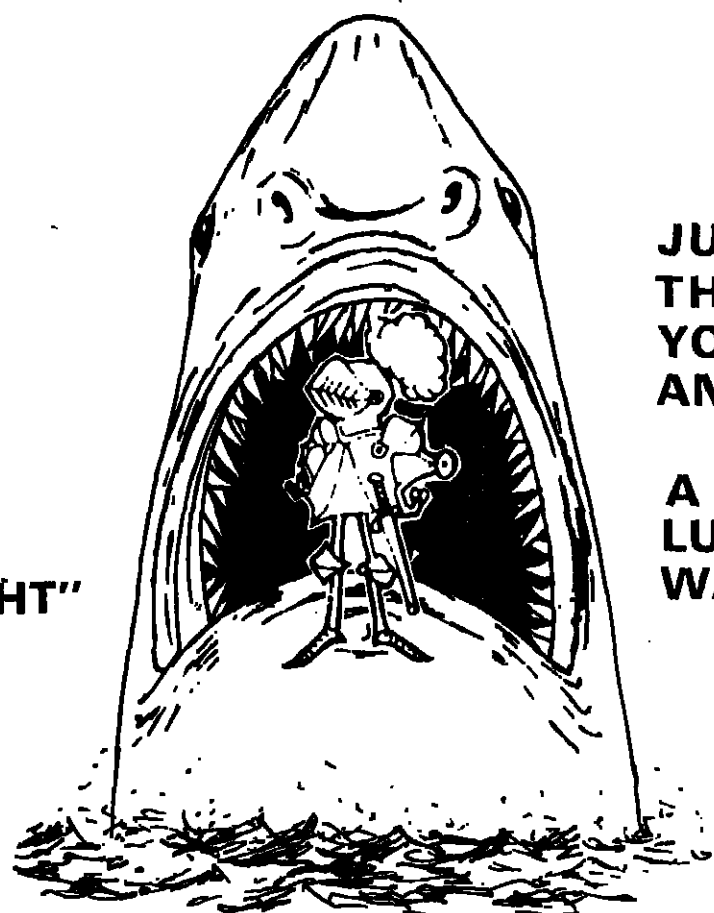
who will be a member of the Society's management team, reporting direct to the Data Processing Manager, and leading a dynamic professional team. Essential qualities required are a minimum of 3 or 4 years COBOL programming, proven leadership ability, plus an unlimited appetite for hard work and imaginative forethought in a rapidly expanding outfit. Salary will be of interest to people currently earning around £8000 a year - but will

be augmented by the use of a company car, a private health scheme - and a generous staff mortgage plan.

We also need a

Computer Operations Manager

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SOMETHING NEW
SNAP UP THE CONTRACT
IDEAL FOR YOU
SEVENTY NINE IS THE YEAR
TO JOIN KNIGHT
SO GIVE US A CALL AND
START YOUR YEAR RIGHT"**



**JUST AS YOU
THOUGHT
YOU WERE SAFE
AND SECURE...**

**A KNIGHT'S CONTRACT
LURES YOU INTO
WATERS ANEW**

MIDLANDS AND NORTH

IBM IMS ANALYST/DESIGNER	c.£250	2960/70 VMEB/K FORTRAN PROGRAMMER NORTHWEST	c.£220
CICS DL/1 COBOL PROGRAMMER ..	c.£230	1900 GII/II COBOL PROGRAMMER ..	c.£215
CICS PL/1 DL/1 CONSULTANT	c.£250	OTHERS	
IMS PL/1 PROGRAMMER	c.£230	PDP11 BASIC + 2 PROGRAMMERS ..	c.£230
IMS COBOL PROGRAMMERS	c.£230	HONEYWELL L66 PROGRAMMERS ...	c.£220
COBOL PROGRAMMERS	c.£220	HONEYWELL COBOL PROGRAMMERS	c.£220
ICL 2903 ANALYST/PROGRAMMER	c.£230	SCOTLAND, MIDLANDS, NORTHWEST	
2903A COBOL PROGRAMMERS	c.£220	UNIVAC COBOL PROGRAMMERS	c.£220
		MIDLANDS	

FOR DETAILS OF THESE AND OTHER CONTRACTS PLEASE RING PERRY BUTLER OR JUDY LEES ON 061-833 9341-5

- ★ High remuneration assured throughout the year
- ★ Security of employment from continuity of work
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- ★ Overseas opportunities
- ★ Financial advice in all matters of taxation, mortgages, pensions

LONDON AND THE SOUTH

£220 IBM RPGII + COBOL DOS/VS	SUSSEX	£320
£200+ ICL 2903/4 TPS EXP	ESSEX	£450
£220 ICL 1900 COBOL *SOME PLAN	HERTS	£375
£220+ PDP MACROII RSXIIIM PROCESS		
CONTROL EXP	HERTS	£350
£210 MINI FORTRAN	BERKS	£325
£230+ MINI COMPILER EXP	HERTS	£EXC RATE
£220 BURROUGHS 6700 COBOL	SURREY	
£210 IBM DOS/VS COBOL	HERTS	
£210 PDP MACROII/RSXIIIM PROCESS	BERKS	
CONTROL EXP		

CONVENTION

IBM PL/I VM DOS PROG	HOLLAND
SYS PROG MVS EXP	HOLLAND
PDP MACROII RSXIIIM KNOW.	BELGIUM
OF FRENCH	HOLLAND
HONEYWELL LEVEL 66 PROG	GERMANY
IBM OS COBOL PROG	
RATE MICRO CODE PROGS/	BELGIUM
RTLII OR PDP MACROII/	
RSXIIIM	BELGIUM
£EXC RATE ANALYST/PROG PL/I EXP	

TEAM LEADER W. LONDON/BERKS to £8,800

International group of companies with outstanding reputation for efficiency, growth and investment seeks a Team Leader to work on development in their Technical Services dept. Applicants should have an IBM background, preferably using PL/I. This is a senior position involving project management and quality control of development phases and to assist with the design and specification of the system.

★ Excellent benefits include non-contributory pension, life insurance and sickness
★ RELOCATION assistance
REF: 2038

EDP AUDIT LONDON — £8,500 NEG

Our client, a British based banking organisation, is currently extending applications for a EDP Auditor. A highly motivated professional is needed to undertake formal audits of world wide network of data centres to undertake system reviews of all projects under development, participating in the cycle of systems development from project initiation through to final testing and formal sign off. Also EDP audit retrieval programs for proving systems and assistance to build auditors. Ideal applicants will have experience to IBM and preferably PDP, on-line experience and use of audit retrieval programs and/or programming knowledge COBOL or BASIC + Co offers.

★ SUBSIDISED MORTGAGE
★ Travel overseas
★ Non-contributory pension scheme
★ Unusual scope for career development
REF: 2005

SENIOR ANALYST/ PROGRAMMERS LONDON — £7,500-£8,500

An exciting opportunity has developed for senior analyst programmers to join major expanding company based in the West End. They retain IBM 370 and applicants should have a good programming background in COBOL preferably with ASSEMBLER on Mainframe. This company has a very good reputation in a variety of commercial projects including marketing and accounting and one person with IBM experience to become heavily involved in database systems development. The company offers attractive benefits including 11 per day L.V. plus excellent opportunity for career development.
REF: 2036

SYSTEMS ANALYSTS SURREY — to £8,000

Management can be yours! Have you the ability to make practical contributions to business decisions, communicate effectively at all levels and at least 2 years IBM systems analysis experience? If so our client, part of a large insurance and financial conglomerate would like to discuss your future. If you have the right experience and strong will to succeed then apply NOW. Co offers —

★ Free life insurance
★ Free BUPA
★ Sports and social club
★ Subsidised staff restaurant and luncheon vouchers
★ Regular salary reviews
REF: 2041

ANALYST PROGRAMMER CITY — to £6,500

With a turnover of £20m our client — a major group of companies has business interests in the UK and overseas, specialising in the provision of a wide range of products and services to various professions. Retaining PDP minis they seek person with at least 12-18 months programming of commercial applications on on-line systems using mini computers or micro computers. Ideally on DEC PDP 11 computers using BASIC + under RSTS/E. The position involves responsibility for the successful production of programs and documentation on systems assigned to. Opportunities are excellent for advancement to project leader level.
REF: 2035

SYSTEMS PROGRAMMER CITY — £8,500

Multi National conglomerate company are seeking programmer to undertake full systems responsibility of their IBM 370 hardware. Applicants will have good technical background with at least 2 years' ASSEMBLER running under entry DOS or OS. This is an excellent opportunity to join the organisation at senior level. Co offers —

★ Excellent working conditions and prospects
★ SITS L.V. Non-contributory pension
★ Security in a growing organisation
REF: 2029

SYSTEMS ANALYST ESSEX — to £8,000

Our client an international manufacturer of sophisticated equipment seeks systems analysts to work on sales of major new projects. They retain ICL hardware but will consider any hardware experience. Ideal applicants will have COBOL programming experience with at least 1-2 years on system and a good business background. The company offers an excellent working environment with usual large company benefits. If you are capable of working and communicating at all levels and can take responsibility for your project please NOW!
REF: 2025

SENIOR PROGRAMMER CITY — to £7,000

Due to expansion this multi national bank has an opening for a Programmer with at least 4 years' ASSEMBLER experience to work on IBM 370 which runs under DOS/VS. This is a very varied position which involves many new and interesting projects related to international finance. If you have the right experience and strong will to succeed then apply NOW. Co offers —

★ Subsidised Mortgage
★ Loan Scheme
★ Annual Bonus
★ Non-contributory pension scheme
★ Excellent prospects for promotion
REF: 2042

PROGRAMMERS HERTS — to £6,500

Major financial institution with easy access routes has opportunities for programmers ranging from 18 months' experience for their large IBM 370 computer products. Candidates at the lower level should have PL/I under OS — but company will train good COBOL programmers. At the senior level, applicants must have PL/I and ASSEMBLER, preferably with supervisory experience. Co offer —

★ Excellent fringe benefit package including non-contributory pension and mortgage after statutory period
★ Good career path
REF: 2020

CHIEF PROG/SOFTWARE ESSEX — to £8,000

Our client, a multi-national company, produce many well-known household brand names, offers considerable scope for personal growth, challenge and motivation. They are seeking a chief programmer for general management of their programming control and training, and to act as a liaison with project managers. They retain IBM hardware and ideal applicants will have COBOL and ASSEMBLER programming under DOS, VOS and preferably T.P. experience.
REF: 2019

PROGRAMMERS BERKS — £EXC

We would like to meet computer professionals on behalf of our clients with at least 3 years' programming experience some of which should be on IBM 370 with ASSEMBLER. The position is based in Berkshire (company will pay relocation if required) with extensive travel to EUROPEAN locations, thus applicants must be free to travel. This is a fantastic opportunity to travel with excellent basic salary plus overseas accommodation and expenses paid by the company.
REF: 2045

ANALYST PROGRAMMER SURREY — to £6,000

World leader in their own field, this organisation has an impressive varied range of interests including the manufacture of highly sophisticated and technological products. With a large IBM 370 computer with T.P. monitor they seek an experienced COBOL analyst programmer for the successful analysis, design and program development of on-line systems within the project group.

★ Fantastic perks include New hours, holiday
★ Concessions, discount on company goods
★ Excellent training facilities and promotion prospects
REF: 2033

PL/I PROGRAMMER CITY — £6,750 c

Young international company operating world-wide seeks programmers and analysts for both systems development and computer services on IBM 370 (under DOS and MVS) with approx. 3 years exp. on PL/I and/or ASSEMBLER in commercial systems with good communicative ability. Candidates will have opportunity of learning database and teleprocessing in an on-line environment. Excellent conditions and friendly atmosphere.

★ Fantastic sports and social club
★ Season ticket scheme, restaurant, flexi hours
REF: 2043

ICL/IBM JNR PROGRAMMER LONDON — £5,500 NEG

Expanding international group currently converting from ICL sys. 4 to 280 seeking IBM or ICL COBOL programmers with minimum 1 year's experience for other machines. Several large projects are currently being developed in an insurance environment but company will consider people with commercial experience.

★ Excellent perks and promotion prospects
★ Bonus and regular salary reviews
REF: 2021

RING CHRISTINE KAY or DAVE HAYTON
ROYALTY HOUSE, 72 DEAN STREET, W1. 734 0152

OFFICES: AMSTERDAM, PARIS, MANCHESTER, BIRMINGHAM

**KNIGHT PROGRAMMING
SUPPORT LIMITED**



**KNIGHT PROGRAMMING
SUPPORT LIMITED**

27 NOEL STREET, LONDON, W1. TELEPHONE 01 734 0152 / 6 (24 HOURS)
OFFICES: AMSTERDAM, PARIS, MANCHESTER, BIRMINGHAM



Computing
Services
Association

Expand our Distribution Outlet

CTL, The British Computer Systems and Software Company, currently embarked on a major expansion programme, can offer excellent career prospects to an International Support Executive to identify and negotiate with potential distributors—initially in the EEC countries.

The successful candidate will be responsible for all stages of contract negotiation, from initial identification to signing, ensuring that distributors have full support facilities and are viable business propositions. Overseas travel will be involved, mostly short visits, of up to around 60-70 days per year.

Candidates must have sound basic knowledge of hardware and software as well as experience with mini computers and real-time orientated systems. Some sales experience is desirable but above all a sound business approach to problems, an ability to act on one's own initiative and first class communication skills, are essential. Knowledge of French or German would be an advantage.

Salary will be up to £8000 + car allowance plus a potential bonus related directly to achievements on contracts. Excellent benefits package includes generous relocation expenses where appropriate.

Please contact Jill McDavitt, Personnel Manager, CTL, Eaton Road, Hemel Hempstead, Herts HP2 7EQ. Tel: Hemel Hempstead (0442) 3272.

CTL

The British Computer Systems and Software Company

Product Manager

up to £9,000 + car allowance
Hemel Hempstead

To join CTL
THE BRITISH COMPUTER SYSTEMS
AND SOFTWARE COMPANY

We seek a Product Manager who, reporting to the Market Development Manager, will have full marketing responsibility for all CTL software—excluding application packages—working closely with the other Product Managers to ensure integration of the Company's total market strategy. Main responsibilities will be for product launches and promotions, keeping up-to-date with market developments, ensuring product literature and training is available and to propose, initiate and progress product and market development to maintain a competitive position for CTL.

Candidates, probably aged 30+, should have a considerable background in software products and preferably previous experience in a marketing environment. Creativity, persuasive ability and first-class communication skills are desirable.

Salary will be in a range up to £9,000 + car allowance and excellent benefits include relocation expenses where appropriate.

Please contact Jill McDavitt, Personnel Manager, CTL, Eaton Road, Hemel Hempstead, Herts HP2 7EQ.
Tel: Hemel Hempstead (0442) 3272.

CTL

The British Computer Systems and Software Company

CLASSIFIED COPY

All classified copy should reach our offices no later than 5.30 p.m. on the Monday preceding Thursday's publication. If complete artwork is supplied 12 noon on a Tuesday.

Ring David Abbey for further details on 01-261 8016.

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LOGICA IS CERTAINLY WELL CONNECTED.

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THEY ARE REGARDED AS

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NOT ONLY IN ROTTERDAM &
THROUGHOUT THE BENELUX BUT
ALSO IN LONDON, STOCKHOLM,

SYDNEY, NEW YORK....

A REPUTATION WHICH

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REAL-TIME Programmers... ...who know what they want and where they are going

Software Sciences, a leading computing and systems consultancy and implementation organisation has earned an international reputation for quality and reliability on many hundreds of major projects — in almost every applications area, and on every significant hardware range. In addition to its mainstream systems, software and turnkey work, Software Sciences has dedicated specialist subsidiaries in such areas as newspaper applications and computer aided design; it has built up an extensive design and build capability in microprocessors; it pursues a successful software product policy; and it was the first software house to establish a distinct R & D facility. The group now has offices in Farnborough, London and Macclesfield, subsidiaries in Warminster, Bedford and Rugby, and an international operation with bases in Holland, Germany, Belgium, Sweden and the USA.

We have a great many opportunities that reflect the large number of Real-Time projects we are currently working on. The one thing which all candidates should have is the desire to succeed and at Software Sciences you will be given the opportunity — regardless of how you measure success. You may be motivated by ambition, achievement, reputation, money, or responsibility. You will be able to choose the career path you want — whether it takes you into management or in pursuit of technical excellence. Wherever you feel you fit, as a vital member of Software Sciences you will be part of a successful expanding group of companies which gives you both security and opportunity. Our vacancies are based in Farnborough, Macclesfield and London, and may involve project work on-site. Salaries will depend on experience but they, and the benefits offered, are unlikely to fall short of expectation.

The coupon indicates the type of experience we are looking for. If you are interested, please complete and return to Sarah Chambers at Farnborough. You may, if you prefer, contact her by telephone or letter for further information or for an application form.

Software Sciences Limited

Abbey House 282/292 Farnborough Road Farnborough Hampshire GU14 7NB

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DATA GENERAL <input type="checkbox"/>	RTL 2 <input type="checkbox"/>
FERRANTI <input type="checkbox"/>	ASSEMBLER <input type="checkbox"/>
BURROUGHS <input type="checkbox"/>	BASIC <input type="checkbox"/>
GEC <input type="checkbox"/>	BASIC + <input type="checkbox"/>
IBM <input type="checkbox"/>	ARGUS SOFTWARE <input type="checkbox"/>
	BURROUGHS SOFTWARE <input type="checkbox"/>

Handwritten signature: *Sarah Chambers*

Operator and Control Clerk Vacancies at Lola

We provide computer facilities to a consortium of four large London Boroughs. The computer centre is situated in modern premises at Enfield and current equipment is a 4 megabyte IBM 370/158. On-line updating facilities are supported on over 100 remote VDUs with programs written in PL/I running under IMS/VS.

Post 1 Deputy Shift Leaders (2 posts)

**Inclusive salary range
£5970-£6331 p.a.**

People with drive and enthusiasm who can demonstrate that they have the necessary high level of technical and managerial skills required for these senior posts within the Operations Section. Candidates must have had at least 4 years' operating experience on large IBM mainframes using OS/VS1 with 2 years at Senior Operator level. An in-depth knowledge of JCL and IBM utilities is essential; you should also have had experience of controlling an IMS to network and be familiar with master terminal operator procedures.

Post 2 Leading Operators (2 posts)

**Inclusive salary range
£4722-£5802 p.a.**

Candidates should be experienced Operators or Senior Operators with at least 3 years' experience on large IBM mainframe equipment using OS/VS1 (or comparable operating system). Knowledge of JCL and IBM utilities is essential and some experience of large tp environments is essential.

Post 3 Operators

**Inclusive salary range
£4170-£4620 p.a.**

Applicants should have a minimum of 1 year's experience of OS/VS1 (or comparable operating system).

Post 4 Shift Control Leader

**Inclusive salary range
£5970-£6331 p.a.**

Candidates must have had 2 years' computing experience PLUS 2 years' experience in a Control environment at an IBM installation running under OS or OS/VS. An in-depth knowledge of JCL and Utility programs is essential.

Post 5 Shift Control Clerk

**Inclusive salary range
£4722-£5219 with possible progress after 6 months to salary range
£5330-£5802 p.a.**

Candidates must have had at least 1 year's experience in a Control environment PLUS a good working knowledge of OS, JCL and Utilities.

FOR ALL THESE POSTS 3-SHIFT WORKING IS IN OPERATION.

For further information or to make an interview appointment contact:-

Peter Anthony on 01-366 6611, Ext. 266 for Post Nos. 1 to 3.
Norman Bennett on 01-366 6611, Ext. 263 for Post Nos. 4 & 5.

LONDON ON-LINE LOCAL AUTHORITIES

Tower Point North
Sydney Road
Enfield EN2 6UE

Closing date 8 February, 1979.

LOLA

Micro-Processor Programmers

**Greater London & E.E.C.
U.K. £5,750-8,200
E.E.C. £10-14,500**

Here is a chance to experience the sharp end of Micro Processor Real-time applications including: Communications, networks, process control, message switching, military systems etc. If you have any Micro Real-time experience using either micro, assembler, Basic or Fortran etc. you will be most welcome as a valued team member. These positions will equally suit candidates with substantial Real-time experience in any of the applications areas mentioned as well as those from a software

background wishing to move into applications. Above all these opportunities will appeal to creative and motivated individuals who enjoy working as a team member. Positions include Project Leader, Systems Designer and Programmer vacancies at leading premises. Please phone or call in at any time for a totally confidential discussion to arrange an early interview with our Client. Ref: 1801/1

Message Switching

**London, H. Counties & E.E.C.
U.K. up to £9,500
E.E.C. up to £15,500**

Message switching systems at the threshold of today's technology are being developed by an International Publically owned company - market leaders in their field. Mini and Micro software specialists with or without prior message-switching experience are invited to join one of several development teams centred in several of our client's South East England locations and in three E.E.C. countries. The scale and sophistication of the project being undertaken is the primary appeal of

these positions. Salaries too are well above the norm. Matrix have been instructed to aid in the appointment of Project and Team Leaders, Systems Designers, Analysts and Programmers, both Senior and Junior. The hardware experience is not particularly relevant but experience at the programming level calls for Assembler or either Cobol, RIL II or Basic. Relocation expenses will be met where applicable and interviews will be held as soon as applications are received. Ref: 1801/2

Mini-Micro Software

**Holland + Belgium
£10,000 - £16,000 p.a.**

Would you like to join the Dutch subsidiary of a world leader in Mini and Micro computer applications? The company itself is a British based International group with offices in five continents. They specialise in the supply of Bespoke turnkey systems based on Mini and Micro processors specifically in the Communications, Message Switching, Network, Process Control and basic software fields. Any assembler language is desirable. To meet their expansion goals they are

creating numerous additional specialist project teams requiring Consultants, Project and Team Leaders, Analysts and Programmers at various levels, specifically a) 5 years plus b) 2.5 years c) Trainees up to 2 years. If the idea of working at the sharp end of sophisticated technical computer pioneering appeals and joining a very prestigious company is meaningful in your career development then you must give serious consideration to these opportunities. Ref: 1801/3

IMS (DB/DC)

**London, S.E. & E.E.C.
U.K. £7-9K
E.E.C. £12-15K**

An International client with an enviable reputation in the application of IMS (DB/DC) to advanced commercial and technical areas has openings in London, Hampshire, Surrey and the E.E.C. Applications Programmers should have extensive COBOL or PL/I experience and have worked under IMS for a minimum of 2 years. You will be given every opportunity to develop your skills within an environment which will encourage you to contribute ideas and expertise and where personal

recognition is expressed in tangible terms. You will be expected to shoulder responsibility and motivate team members working under your supervision. Salaries will be scaled to reflect not only your achievements to date but also your potential. Serious consideration will be given to applicants who have previous experience of large financial systems under IMS. Interviews will be held in London as soon as applications are received. Ref: 1801/4

Cobol & PL/1 Programmers

**City, Croydon & Middx.
£6,000 - £7,800 p.a.**

A prestige Software House has immediate vacancies at their London head office and at several of their Home Counties locations for COBOL and PL/1 Analysts, Programmers, Programmers and Systems Designers at various levels of seniority. Amongst the numerous advantages of working for this Software House apart from higher pay are the scope and variety of projects, the opportunity of learning new languages and exposure to a range of hardware. These benefits can rarely be offered within an end user environment. You will certainly be called upon to shoulder more responsibility than

you have done in the past and will be given a degree of autonomy which if used to full benefit will give you a new horizon of freedom. Can you offer 2.5 years plus COBOL or PL/1 experience on any major manufacturers' main-frame or Mini computer? If in addition you have special skills such as Data-base or on-line experience you will be given a considerable measure of seniority straight-off. Of prime importance is a sound commercial background demonstrating stability and a record of fulfillment in the projects on which you have worked. Ref: 1801/5

AUSTRIA - Two Senior Systems Analysts with Military systems backgrounds. Salary range £15-18K. Must have sound analytical and design experience ideally on PDP 11 distributed processing system. Ref: 1801/6

ITALY - Programmers and Analyst Programmers with PDP 11 under RSX-11M required for long contract involving automated warehousing. Excellent pay and conditions are assured. Ref: 1801/7

CICS Analyst Programmer, O.S. or DOS with either COBOL or Assembler experience. Central London based. Salary dependent on experience to £7,250. Financial systems background preferred but not essential. Ref: 1801/8

ITALY permanent or contract. If you have any Honeywell L6 or L66 experience using COBOL then our client wants to meet you soon. Salary negotiable but certainly high. Ref: 1801/9

DENMARK + GERMANY - IBM IMS and/or Univac 1100 DBMS applications exposure required for early 1979 start. Prefer permanent career person but consider contract. Ref: 1801/10

BERKSHIRE/HANTS BORDER - Micro specialists (Intel 8080, Zilog Z80) required by turnkey systems supplier. Established U.K. company can offer outstanding career position. Salaries to \$8K+. Ref: 1801/11

BRUSSELS - T.P. and D.B. Applications and Software Programmers. Prefer IBM software. Full relocation expenses and vast range of real company benefits whilst salaries to £16K. Interviews at our London office. Ref: 1801/12

CITY - Programmers for Merchant Bank with 1900/2000 experience including COBOL. Driver 5/for Maximo would be advantageous. Salary c. £5.5K + mortgage. Ref: 1801/13



360 Oxford Street, London W1N 9HA.
Telex 28800.



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DUNDEE COLLEGE OF TECHNOLOGY ANALYST/PROGRAMMER

Applications are invited from suitably experienced persons with a background in commercial data processing for a vacant post in the Computer Centre, which is responsible for all computer services in the college. There are interesting opportunities in both technical and commercial applications on the college's DECSYSTEM-20. Duties will include an advisory service to users.

Salary on the scale up to £4,773 with possible future advancement to a higher scale. Financial assistance towards the cost of removal expenses may be payable.

Further particulars and application forms may be obtained from the Administrative Assistant (Establishment), Dundee College of Technology, Bell Street, Dundee, DD1 1HQ, to whom completed applications should be returned by 5 February, 1979.

COMPUTING TECHNIQUES

Britain's largest manufacturer of hybrid computers is expanding. For the past 12 years we have been quietly building a reputation as the 'can-do' company in the analogue and hybrid field. We are now capitalising on this depth of experience by adding digital systems to our range of existing applications in scientific computing, research and development, and process control.

Several experienced managers have recently been recruited to direct the company's future and we are now looking for a number of suitably qualified people to help us meet our targets.

London area sales manager.
We need a salesman with experience of simulation, analogue, hybrid and scientific computing or process control components and

systems. Age is important but experience and enthusiasm vital. The right man or woman will expect a package of around £10,000 plus and assistance with relocation if necessary. Other normal company benefits apply.

If you meet our criteria, are hardworking and enthusiastic, write to us. Even if you don't quite match but you feel you have something to offer write to our managing director, Paul Kimberley, at the address below.

COMPUTING TECHNIQUES INTERNATIONAL LIMITED
Brookers Road, Billingham, Gateshead, Co. Durham, NE11 4PR. Telephone: Billingham (0462) 8171



Suite 74-76,
12/13 Henrietta Street,
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London WC2E 8LH

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FOR THE GIRLS



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Other Benefits include

★ Salaries to £8,000

★ Variety within career progression with the opportunity to gain 5 years experience in 2 years based on pure technical achievement.

★ The satisfaction of working in small teams with large company privileges.

★ Possible overseas travel.

★ Rewards proportional to achievement

Telex and Data

Our exchanges are highly acclaimed as international leaders in stored Programme Control Technology. The rapidly growing world demand for processor controlled switching now calls for an expansion of our software and systems development facilities. To meet this expansion we require engineers who wish to take advantage of working in this challenging field and who have experience in telecommunications switching and/or real time computing.

Group Leaders (Software)

to be responsible for systems specification, software development and customer liaison.

Traffic Control Applications

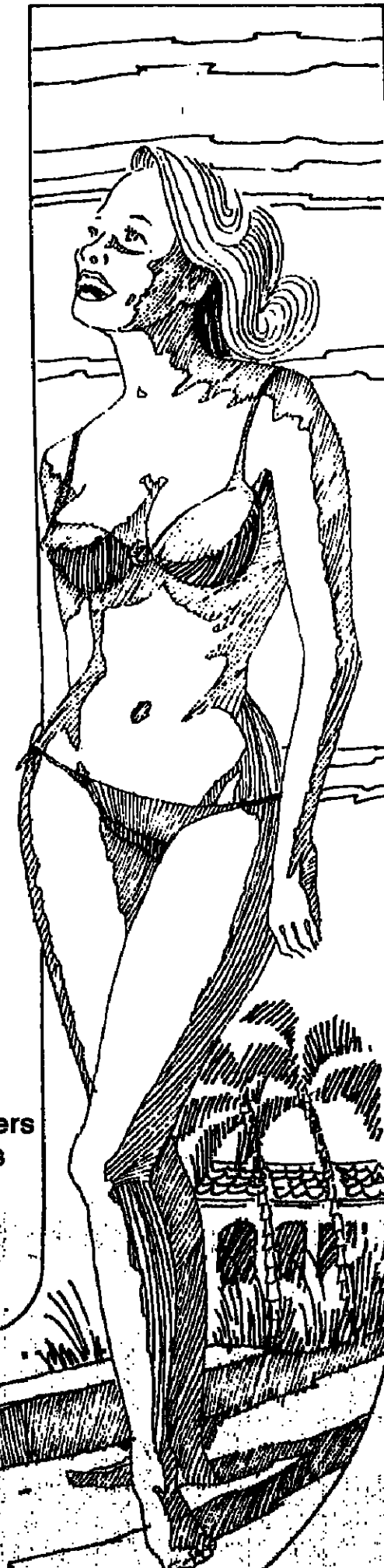
We are proud of the achievements won by our advanced technology. Our wide area traffic control systems have been adopted by large cities at home and overseas and we have now landed a major contract for Sao Paulo in Brazil. This and many other projects, create a stimulating environment for ambitious engineers with experience in any one of the following: DEC, PDP11, CORAL, RSX11M.

Principal Engineers, Engineers (Software) and Programmers

to be responsible for systems specification and software development.

**For a prompt interview contact
Marilyn Davidson 01 240 3223**

FOR THE BOYS



LONDON BOROUGH OF BROMLEY

With a view to extending computer services into hitherto unexplored areas of Council's activities and the assessment and planning for a new range of computer equipment a re-appraisal has been undertaken of the structure of the DEVELOPMENT SECTION of the COMPUTER DIVISION which now consists of 19 staff organised into three MULTI-DISCIPLINE PROJECTS TEAMS. The following new and consequential vacancies now arise and applications are invited:

DEVELOPMENT MANAGER

Salary range £7,887-£8,634 P.a. (Ref: B.267)

Responsible to the Head of Computer Services for the control of a Development Section introducing and maintaining computer systems throughout Council's departments. The successful applicant will be expected to have had extensive experience in both programming and systems design together with a proven background of successful project management. This is a senior appointment which acts as deputy to the Head of Computer Services and forms part of the computer management team responsible for extending computer services and involves assistance with the selection of both hardware and software.

SENIOR SYSTEMS ANALYST

Salary £6,012-£6,627 p.a. (Ref: B.361)

To work as part of a project team or independently except for general guidance by the Project Leader, an computer systems development and maintenance. Applicants will be expected to have undergone formal training and ideally possess the NCC Basic Systems Certificate and have had at least three years' computing experience.

PROGRAMMING TEAM LEADER (2 posts)

Salary £6,012-£6,627 p.a. (Ref: B.263)

Experienced programmer, minimum two years, conversant with COBOL required to supervise small programming team and to support Project Leader in the design, development and maintenance of computer systems. Knowledge of PLAN would be an advantage.

SENIOR PROGRAMMER/ANALYST

Salary £5,517-£6,345 p.a. (Ref: B.364)

Programmer with knowledge of COBOL and 2-3 years experience required to assist in controlling small programming teams and deputising for Programming Team Leader in his/her absence.

SYSTEMS ANALYST (2 posts)

Salary up to £6,345 p.a. (Ref: B.278/7)

Required to assist in the design of computer systems and undertake some projects on own initiative under the general direction of Project Leader or Senior Systems Analyst. NCC Certificate would be an advantage.

THE INSTALLATION consists of an ICL 1903T 128K Computer with EDS 60's and M1 Tapes running under George 3 Operating System which supports an on-line VDU and MRP service during prime shift together with batch processing and a remote job entry Key to Disc data preparation service.

THE WORK involves the development of both on-line and batch systems and the whole concept of future development plans and future hardware requirements is currently under review with the possibility of introducing database management techniques. STARTING SALARIES will be commensurate with age, experience and qualifications up to the maximum quoted.

ADDITIONAL BENEFITS INCLUDE: Flexible working hours, Excellent annual leave conditions, up to 28 days for the Senior appointments, Assistance with relocation expenses, Interest free rail ticket loans, Canteen facilities, Social Club.

LOCATION — BROMLEY is an outer London Borough primarily residential, situated on the fringes of the green belt and Kent countryside. Closing date 1st February, 1979.

Application forms from Assistant Chief Executive (Manpower), Town Hall, Bromley, Kent. Tel: 01-484 3333, Ext. 3318. Please quote the relevant reference. Further information regarding duties etc. available from Assistant Treasurer (Computers), Tel: 01-484 3333, Ext. 3348.

JOINT MATRICULATION BOARD

Universities of Manchester, Liverpool, Leeds, Sheffield and Birmingham Applications are invited for the following posts in the Board's computer installation which operates an IBM 370/115.

SYSTEMS ANALYST

Salary within the range £1578-£1768 (scale under review). A Systems Analyst is required to support the work of the applications programming team and to play a leading part in the development of new systems including job scheduling. Applicants should have two years' experience of systems analysis work and have a sound knowledge of COBOL (some experience with IBM Assembler would be an advantage).

PROGRAMMER

Salary within the range £2885-£3120 (scale under review). Programmer with a minimum two years' practical experience required to develop and maintain programs. Applicants should have a sound knowledge of COBOL and PL/I. Applications should be sent to the Secretary (Staff), Joint Matriculation Board, Manchester M13 9LU.



Software Engineer

We are looking for an experienced man or woman to join the Design and Projects Division of the Vickers Group, which is responsible for the overall design and execution of major engineering contracts.

Responsible to a group leader you will be working with a multi-disciplinary engineering team on writing software, particularly for the DEC PDP 11 computer system for data logging and other engineering applications.

To meet the demands of this responsible appointment you should have an HNC or degree in a relevant subject plus some experience of the PDP 11 in a technical application.

We offer a competitive salary plus benefits which include pension scheme, life assurance and a subsidised staff restaurant.

If you are aged 23-35 and are interested in this position, please send brief details of career to date, including current salary, to Margaret Martindale, Personnel Department,

Vickers Limited, Design and Projects Division, Market Street, Eastleigh, Hampshire.

Vickers

PERKIN-ELMER

SOFTWARE DEVELOPMENT PROGRAMMERS

SALARIES UP TO £8,000

PERKIN-ELMER DATA SYSTEMS has further vacancies for programmers to work in our Basic Software Department. The people sought will have a good background in Assembler-Level programming and a working knowledge of a high level language, and will be provided with an unparalleled opportunity to enlarge their practical experience on compilers, database and transaction processing systems whilst earning a salary up to £8,000.

The Company's European Headquarters is located in Berkshire and is the base for Software Development. There are excellent motorway and rail links to London and the West Country.

We provide all the usual large company benefits, including relocation expenses where appropriate, pension and health insurance.

For further details, telephone or write to Len Barlow at:

PERKIN-ELMER DATA SYSTEMS
227 BATH ROAD, SLOUGH, BERKS.
Tel. Slough 34511, Ext. 95

INTERNATIONAL ANALYST/PROGRAMMER

CMC Ltd. require an
ANALYST/PROGRAMMER

for our International Support Team. Based at Hemel Hempstead, the successful applicant will be expected to travel frequently to Europe and the Far East.

He/She should be self-motivated and able to communicate well at all levels. Experience on Assembler and/or BASIC would be an advantage.

Applicants should telephone (reversing charges) Hemel Hempstead 61266, and ask the Personnel Department for an application form or you can write to them at the following address:

CMC Computer Machinery Company Limited
Maxine Close, Hemel Hempstead, Herts. HP2 7LA
Telephone: 0442 61266, Telex: 829829 CMC GB

GHANA SYSTEMS TRAINING MANAGER

c. £12,000

Ashanti Goldfields Corporation (Ghana) Ltd.

A vacancy exists for a Systems Training Manager with in-depth knowledge and extensive practical experience of systems design and programming in PL/I and BASIC, and IBM/360. The installation comprises an ICL 1901T Computer, 40K, with EDS 60's and local area display terminals with terminals.

The appointment will involve: preparation of detailed systems and programming specifications; guidance, advice and counsel to programming staff; training of local staff in practical systems design and analysis.

The successful applicant will lead the project to redesign existing magnetic tape systems to operate effectively in a disk and communications environment. Ideally, past experience will have been gained in a small installation where the applicant has been fully involved at all stages of systems, programming and operational implementation. Experience of working overseas will be an advantage.

Salary is payable in Ghana, with proper remittance facilities, and the above figure is intended equivalent at present rate of exchange.

Conditions of service are in line with modern expatriate practice and include:

5 year contract
15 month foreign tour, with 3 months' leave
Family passages each tour
Provident, gratuity and life assurance schemes
Staff primary school/education allowances
Free furnished accommodation
Good sporting facilities.

Please write in confidence, quoting Ref. WJ14, to: A. Orchard, Group Personnel Manager, LONHRO LIMITED, Cheapside House, 138 Cheapside, London, EC2V 6BL.

COVENTRY CITY COUNCIL

Operations Controller

Salary up to £6702

THE JOB To plan, control and motivate the activities of all staff in the Operations Section with particular attention to day-to-day matters.

THE INSTALLATION A large ICL System 4/72 on 3 shifts, due for replacement between 1980 and 1982. Data preparation by a dual processor key to disc system with 24 key stations on 2 shifts.

RESPONSIBLE FOR about 50 full-time and 30 part-time staff working a variety of shift arrangements in operating, data preparation and control.

RESPONSIBLE TO the Operations Manager who will be devoting the majority of his time to the equipment replacement study over the next year.

EXPERIENCE REQUIRED It is unlikely that anyone with less than 5 years in computing would have the experience and maturity sought. However, this experience could have been gained in any or several of the relevant areas. Considerable supervisory experience is necessary either in one such area in a large organisation or as manager in a smaller one. Systems or programming work will be considered as relevant areas.

CONDITIONS OF SERVICE At least 28 days' annual leave plus 12 fixed days. Staff canteen, sports facilities, local government sick pay and superannuation. No shift working is required but some out of hours involvement is inevitable.

SALARY Starting salary in range £5727-£8342, according to experience, progression possible to £10,000 conditional grant of up to £850 may be available towards legal and removal expenses.

INFORMATION? Please write to Mike Rowe, Operations Manager, Computer Division, Council House, Earl Street, Coventry CV1 5HQ, or telephone him on 0203 28855, Ext. 2723 (outside office hours ring 0203 28711) for further details and application form.

Closing date for completed applications: 1st February, 1979.

coventry

SENIOR SYSTEMS ANALYST

£6,500

This is an excellent opportunity for gaining experience and career progression in a sophisticated DP dept. Applicants with about 3 years systems experience, can expect to be involved in Real Time Distribution, Stock and Accounting systems.

SYSTEMS & PROG. MANAGERS

£8,000+

Analysis and programming experience essential using both mini and mainframe computers. Candidates must have designed and implemented at least one system or commercial/financial applications. Management experience useful.

FINANCIAL SYSTEMS

£6,500+

3 years' Analysis experience reqd. You will be responsible for systems covering general sales and bought ledgers and associated information.

SYSTEMS PROGRAMMERS

To £5,000

2 years' systems programming experience required using Assembler or COBOL or ALGOL.

PROGRAMMERS

To £5,000

At least 18 months commercial experience is required using COBOL or PL/I.

Please phone for an Application Form and for further details of the above positions and vacancies in your area.

AMES PERSONNEL

Employment Agency Suite 14, Dryden Chambers, 119 Oxford Street, London W1R 1PA Tel: 01-434 1106

UNIVERSITY OF LIVERPOOL SENIOR COMPUTER OPERATOR

Computer Laboratory

To work on University's central 1906S computer system operating under George 4, at least two years' relevant experience with minimum of four GCE 'O' Levels and at least 21 years of age. Salary on scale £3,078-£3,774 p.a. depending on age and experience; inconvenience allowance additionally paid for 3-shift working.

Application forms from The Registrar, The University, PO Box 147, Liverpool L69 3BX Ref: RV/480/CW

CAPITAL APPTS.

GRADUATES

Urgently required for various positions in industrial scientific and commercial fields. SALARIES c. £2,000 ALL AREAS

337 5557 day, 636 9659 eve

"I see no ships"

Nelson could say that - but in the modern world his chance of survival would be practically nil. Underwater weapons have made sure of that.

Sperry Gyroscope have a Design and Development unit at Weymouth in Dorset engaged on high technology work in the field of Advanced Underwater Weapon Systems.

A young Computer Programmer is required to work on the design and analysis of underwater systems. I would like to hear from programmers who have at least one year's experience of Fortran or any Assembly Language.

Weymouth, and Dorset generally is one of the most attractive locations in the U.K. Besides the sea-side there are plenty of rural pursuits, attractive housing, beautiful surroundings, excellent schools and good communications generally. Sperry Gyroscope offer excellent salaries and prospects backed by a comprehensive range of benefits, including generous relocation expenses in approved cases.

Contact: Tony Mason on Wimbome 889382 or 880146 PER. 61 West Borough, Wimbome, Dorset.

PER
Professional & Executive Recruitment

SPERRY
GYROSCOPE
DIVISION OF SPERRY GYROSCOPE LIMITED

Write your programme for success in process control software

Expansion of the Development Department has created a need for an additional Systems Programming Engineer to generate process-control software for both mini-computers and microprocessors. The company's fast-growing involvement in turnkey process projects involving bulk handling and continual weight control for major UK and overseas users makes this a key opportunity for someone to extend their experience in this field. This is a growth opportunity in today's growth field in industrial technology.

Applicants, male or female, should have at least two years' Real Time Applications experience, a background of FORTRAN and P.D.P. 11/Assembler Language, and will preferably have some experience with the associated hardware.

Please write and tell us why you think you are qualified for this post.

R. A. Eastham, Personnel Manager,
Howe Richardson Scale Co. Ltd.
Arnsdale Road, Eastwood Park Estate, Nottingham.
Telephone: 808181.

NATIONAL MANAGER SOFTWARE SUPPORT MINI-COMPUTERS LONDON BASED

One of the keys to success in the marketing of small computer systems lies in the willingness and ability of the manufacturer to provide its own package software covering the main commercial and industrial application areas. Our client is a manufacturer of high repute who is dedicated to providing its customers with software as well as hardware in a total solution to their commercial data processing needs.

A National Software manager is required to lead an established Head Office group developing commercial applications packages and providing technical support of operating systems. There is also a functional responsibility for the activities of software support groups within each Sales Branch engaged in pre and post sales support activities.

The successful candidate should have at least two years of experience in each of the following:—

1. Programming, preferably in both COBOL and BASIC.
2. Systems analysis and design of real-time applications.
3. Management within a support group of a computer manufacturer.

This company has a long established experience of commercial applications systems and an outstanding record of growth providing tremendous scope for personal advancement.

An income package is negotiable around

£10,000 p.a.
+ 2.0 litre car

—plus normal large company fringe benefits.

This opportunity is open to both men and women.

Please apply to Bernard Conn,
quoting reference ONO 094

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LONDON & MIDLANDS

GOSWOLD DISTRICT COUNCIL

Finance Department

PROGRAMMER

(Scale APV —

£4,245-£4,892 p.a.)

Applications are invited from programmers with at least 2 years' experience in the use of COBOL. The post encompasses development and maintenance programming for the Council's 318C Honeywell 2020 with disks and magnetic tapes.

The Council is based in Goswold and administers the Goswold local water-treatment plant at Goswold, including much of the Goswold.

Reimbursement of removal expenses and lodging allowances are available.

Application forms are obtainable from the Director of Finance & Personnel, 11, Goswold Street, Goswold, Glos. (Phone Goswold 5787 ext. 272) and may be obtained from Mr. A. Bradley (tel. 274) Closing date: 26th January, 1979.

FREELANCERS

Drop us a line for '79. Help us make your year a happy and prosperous one by joining our contract register.

P.O. Box No. 13
Sudbury, Suffolk IP10 6BP
Tel: 0781 73252

Management Services Manager New Appointment — Lancaster

This key senior appointment is with STOREY BROTHERS & COMPANY, LIMITED, a £58m. turnover company which is part of the Turner & Newall Group. The company employs 3,500 and manufactures Con-Tact, Decorane, Velbox and a wide range of other PVC sheetings and coated plastics.

The post is to be created at the company's Head Office at Lancaster. The new Management Services Manager will report to the Finance Director and be responsible for the full operation and development of the company's Management Services, including EDP. The company operates from various sites, all of which will be included within the responsibilities of the Manager. There will be an important requirement to extend internal systems by developing advanced transaction processing systems using VDU's and where appropriate, distributed processing techniques.

The T&N Group centrally operates a five megabyte IBM 370/158, shortly to be enhanced by a 188 Attached Processor.

Candidates clearly must have extensive experience in computing and systems design, and a sound knowledge of current developments in the telecommunications field is essential. They currently may be in a fairly senior capacity in Management Services and may at present be an 'hourly' with current earnings between £7000 — £8000 a year. Generous assistance with removal costs will be provided to this very pleasant area.

Please write, in confidence, enclosing full career details and salary to:

TURNER & NEWALL LIMITED
P. L. Stiles,
Personnel Director,
Storey Brothers & Company Limited,
White Cross,
Lancaster LA1 4AH.
This appointment is open to men and women.

MANCHESTER BASED EXPERIENCED SALES MANAGER OR SEEKING YOUR FIRST MANAGEMENT OPPORTUNITY?

£10,000 p.a. 1st YEAR GUARANTEE

Company Car Expenses Excellent Big Company Benefits

One of Europe's Largest "NETWORK INFORMATION SERVICE" Companies is expanding its operation into the North of England. The well established excellent business at "Arms Length," our clients are basing a business centre on MANCHESTER to cover the North of England and Scotland.

The company have acquired impressive new offices and now have a requirement for a skilled Sales Manager. The successful candidate will initially be required to recruit further Salesmen and will then "BUILD HIS EMPIRE" as the business level increases. The Northern Branch will operate as a separate cost centre and will have its own profit and loss responsibility.

Candidates should be fully conversant with the computer service industry, and have preferably held a position of responsibility. However, if you consider yourself ready for your first Management role, you will be given every opportunity to "state your case." You should be aged between 28 and 35 and have the ability to control and motivate Salesmen to sell high value "intangibles" to MAJOR ACCOUNTS.

Make no mistake, this is a tremendous opportunity to work with the MARKET LEADERS in their field, and successful candidates can look forward to an exciting lucrative and progressive career. A first year guarantee of £10,000 per annum will be provided plus a Company Car and other fringe benefits.

For a confidential discussion, please telephone the advising consultant quoting ref. no. DVW 79/2.



**INSIGHT MARKETING & PERSONNEL
CONSULTANTS LTD.**
72-75 MARYLBONE HIGH STREET
LONDON W1M 4AJ Tel: 486 5644



ENGINEERING — SYSTEMS SPECIALISTS

TO FORM THE NUCLEUS OF THIS GERMAN BASED EUROPEAN OPERATION

Are you presently employed in a safe and sterile environment?

Think about it!

Yes — Read on, you may find your way out!

No — Read on, you are the sort of go ahead people this industry desperately needs.

We require well versed mainframe systems engineers who wish to develop their technical/management skills in a commercial environment. The sort of people to whom these positions will appeal, are those who no longer accept that a pre-ordained, service orientated career development path is for them, in other words leaders in the industry, not followers of it.

We can provide people with the opportunity to form the nucleus, and by definition the future European systems and support management function, on a new product range with a well established and prosperous mini computer manufacturer.

We require 4 to 5 years' mainframe systems knowledge, hardware and systems software, preferably IBM 370 series, but we will be happy to talk to all mainframe systems engineers.

We can offer a salary of up to £25K x relocation + car, 4 weeks holiday, and paid time off to attend German lessons. Initial training will be in the USA.

In the first instance telephone us quoting Ref. JMC/4 to arrange an interview.



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Disciplines



CHOOSE WHERE YOU WORK
RURAL BUCKS. OR CITY

ANALYSTS AND PROGRAMMERS to £7,500 + Benefits

A young dynamic Systems House with several U.K. offices, is looking to 1979 as its third successive year of growth.

Until now all of its systems have used Mini computer hardware. However, in keeping with its style they will be diversifying into new markets in 1979. This continued growth is thus your opportunity to move into the latest software and hardware technology.

Analysts who can demonstrate a commercial systems background on Minis, particularly PDP 11s, and Programmers who possess a sound knowledge of BASIC are the technical requirements. Equally important is the ability to work in a team environment to tight deadlines with some of the most professional people around.

Rapid career progression based on merit, will be to Technical Consultant or Project Management positions.

Don't miss this opportunity — phone me, GEOFF MARSH
on 01-499 4501 NOW

Ref: RW 3/1

SOFTWARE ENGINEERS

to £8,000 + Relocation

One of the world's major manufacturers of Hardware Systems are seeking to augment their existing team of Software Engineers with both senior and junior programmers.

Working on the very latest Mini and Micro Hardware successful candidates can look forward to a rewarding career initially in one of these two areas.

★ Operating Systems ★

★ Data Communications ★

Both of these areas call for low level programming skills and individuals will be expected to demonstrate their ability in identifying problems and in proposing and executing their solution. Your future is secured with a manufacturer committed to staying at the forefront of technology.

Call me, GEOFF MARSH, on 01-499 4501

Ref: RW 3/2

ANALYST/ PROGRAMMERS

MOORGATE £5,000 - £7,500

Our client is the major multi-national supplier of NETWORK SERVICES; because of the continuing growth within the UK, the central implementation group has additional staffing requirements at all levels. All positions offer:

- ★ PROJECT PARTICIPATION FROM DESIGN TO HANDOVER
- ★ UK AND INTERNATIONAL APPLICATIONS
- ★ FLEXIBILITY OF HOURS
- ★ EXCELLENT TESTING FACILITIES VIA TERMINALS
- ★ ADVANCED SOFTWARE WITH PROVEN TECHNICAL SUPPORT.
- ★ MODERN OFFICE FACILITIES

As they provide continuous training utilising modern educational facilities, reinforced by extensive departmental experience, they are seeking Analyst/Programmers with 18 months' to 4 years' experience with high level languages on any hardware.

For further information please telephone GEOFF MARSH on 01-499 4501.

Ref: RW 3/3

SOFTWARE PROGRAMMERS

to £8,000 + Relocation

MICROS IN THE HOME COUNTIES

One of the world's major corporations have been involved in creating a new generation of high technology Voice and Data Communication Systems. The 1980s will see a radical change in our public and private telecommunications facilities.

To make this change happen generic software has been designed to control these multi-microprocessor-based computer systems.

Technically, you should be able to demonstrate a knowledge of block structured high-level language. Additional knowledge of low level languages, man-machine interfaces and real-time communications procedures would be particularly well received.

Successful candidates will be secure in the knowledge of a high salary range and more senior people can now receive the rewards their experience deserves.

Why not call me, GEOFF MARSH on 01-499 4501 for more details and a confidential discussion.

Ref: RW 3/4

hutchinson-scoggins recruitment
47/48 New Bond Street (entrance in Maddox Street) London W1Y 0HE Telephone 01-499 4501

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NATIONAL ACCOUNT MANAGERS

Intelligent Terminal Systems

Distributed Processing

Communications

Incomes c. £17K

Excellent Guarantees — Co. Car

Our clients are a division of a Multi-National, million pound turnover, conglomerate. Investing in excess of £35 million p.a. on research, they have developed an exciting and powerful range of terminals and communications systems which are already proving highly successful.

The company is embarking upon a massive expansion programme, which by 1980 will catapult them to the forefront of the market place.

New products about to be launched and future plans will ensure not only very large incomes for successful candidates, but also excellent career prospects. It is intended that the initial intake of new personnel will form the management structure over the next year or so. Candidates should therefore have the potential to move into a more senior position within a relatively short time scale. Indeed, there is currently a SENIOR MANAGEMENT opportunity available, and all relevant applicants will be considered for this position.

We are interested to hear from applicants who have a sound business sense, capable of negotiating multiple sales at a high management level, with the drive and ambition to really succeed in this very lucrative market place.

Successful candidates will be offered a basic salary of between £6K and £8K (more if you can justify it), substantial income GUARANTEES and a genuine income potential of circa £17K. A company car or allowance will be provided plus other excellent fringe benefits.

This is a REAL opportunity for 1979 and beyond — DO NOT IGNORE IT!

BANKING AND FINANCE

Incomes c. £17K

We are seeking experienced Salesmen with a good track record working within one or more of the following sectors: BANKING — FINANCE — BUILDING SOCIETIES — INSURANCE. Experience gained within the computer industry in general is essential, but a knowledge of terminals or distributive processing or communications would be a distinct advantage.

GOVERNMENT

Incomes c. £15K

Our main requirement is for personnel who understand the working of the C.C.A. and who are accustomed to negotiating high value multiple contracts.

MAJOR ACCOUNTS

Incomes c. £15K

An unparalleled opportunity exists for candidates with a sound business sense, capable of negotiating sales at a high management level with the "Times Top 1000" companies.

Experience of Distributed Processing or terminals would be an advantage, but not essential.

For a confidential discussion please telephone or write to the advising consultant quoting ref. no. DVW 79/1.

WE LOOK FORWARD TO MEETING YOU.



INSIGHT MARKETING & PERSONNEL
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School of Mathematics
Computing and Statistics
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TEMPORARY LECTURESHIP IN COMPUTING SCIENCE

Candidates should be able to offer one or more of the following: computer architecture, real-time systems, microprocessing, communications, process control, at levels up to B.Sc. (Hons).
Post tenable for one year from February 1979.

Preference will be given to applicants with relevant industrial or research experience.

Application form available from Staffing Officer, Leicester Polytechnic, P.O. Box 143, Leicester LE1 8BH. Tel (0533) 50181 Extn. 2303

CHELSEA COLLEGE
University of London

PROGRAMMER

Required to work in the Information Processing Group of the Computing Unit, to develop and support applications mainly written in COBOL and BASIC. Education to 'A' level standard, or equivalent computing experience will be required. Salary scale: £3,600-£4,100 or £4,100-£4,700 per annum (inclusive) dependent on qualifications and experience. Further details and application forms from the Secretary, Computing Centre, Chelsea College, Pulton Place, Fulham Broadway, LONDON SW6 6PR. Tel. 01-736 1244.

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Ring David Abbey for further details on 01-261 8016.

Computer Centre—Barking

Senior Operator

T3/T4

required to work within the Operations Group to control the flow of work through the computer and to monitor equipment for possible malfunction. Candidates should have experience of ICL 1900 series computers and should be educated to 'A' level standard. Inclusive annual salary ranges from £4,810 to £5,536 according to age, qualifications and experience (Ref A661/78)

Senior Operator

T3/4

required to control the flow of work through the computer in accordance with standard procedures. Applicants must be educated to 'O' level standard and preferably have some experience of ICL 1900 series computers. The successful applicant will be expected to work night shifts on a regular basis. Inclusive annual salary ranges from £4,882 to £5,982 according to age, qualifications, and experience (Ref A668/78)

For application forms and further details contact the Personnel Department, North East London Polytechnic, 109 The Grove, Stratford, E15, telephone 886 0511, ext. 32, quoting the relevant reference number.
Closing date: 28th January, 1979.

NELP North East London Polytechnic

At Honeywell we really appreciate SALES EXECUTIVES...

...in every sense
of the word!

There is much more to a selling job with Honeywell than just the prestige of working with one of the top names in the computer industry. In every way our sales executives are highly valued employees. We pay them well, we train them thoroughly, we support them with enthusiastic and highly competent pre and post sales support technicians, we provide them with real scope for creative selling and above all, we ask them to sell a range of computers which is at the forefront of technology and performance.

Levels 62 and 64

Across the United Kingdom our business is expanding rapidly, with particular success in

East Anglia

where our growth has created the need for further SALES EXECUTIVES based at our COLCHESTER offices. This operation is well supported with demonstration facilities, highly qualified support personnel and a wide range of exciting clients.

We generally expect our sales executives to earn between

£11,000 and £14,000 per annum

as well as providing them with a company car and a variety of fringe benefits, but of course this income range excludes our 'high fliers'.

If you are already a successful sales executive with over 2 years direct experience of selling commercial applications systems and feel that your career path is in need of enhancement, we'd like to meet you—wherever you are!

Please quote reference HEA 019 to:
SMR Sales & Marketing Recruiters Ltd., Victory House,
99 Regent Street, London W1R 7HB. Telephone: 01-734 9776.



THE SALES AND MARKETING BIT

Take your pick— 20 specimen New Year resolutions

SO here we are again at the beginning of a New Year, and for every salesman, no matter how well he performed last year, there awaits the challenge of proving his capability over again.

This is also the right psychological time for new beginnings in the shape of traditional New Year resolutions. Invariably these promises of self-improvement imply the application of greater personal discipline—stop smoking, more exercise, reduce eating and so on.

I would like to propose that this year salesmen add at least one other resolution to these they may already have made. This should take the form of a personal commitment to apply one or more selling disciplines throughout the coming year which they know they have not effectively applied hitherto.

During last year this column has touched on a wide range of selling related topics and from them one can generate a wide range of potential New Year resolutions.

Here is a single sentence summary of some of last year's articles from which you might care to choose a resolution that you feel is appropriate. Sales managers might even gain some benefit from inflicting a few!

Throughout the coming year I will definitely:

1. Include Monday morning and Friday afternoon in my working week, particularly as far as face-to-face calls are concerned.
2. Pre-plan all my sales calls.
3. Write my call-reports immediately after each call.
4. Not discuss company business in public.
5. Apply "vertical marketing" discipline to sales activity within my territory.
6. Urge my company to provide on-going sales training.
7. Identify sales benefits and sell sales advantages.
8. Always be sure I have identified the client's problem and agree it with him.
9. Make sure my sales proposals contain no surprises, but confirm all sales benefits and advantages already agreed.
10. Apply the "so what?" test to all sales benefits before I present them to clients.
11. Qualify all prospects thoroughly before committing my company's resources.
12. Analyse all completed sales negotiations, whether won or lost, to discover why.
13. Avoid the use of industry jargon, initials and abbreviations.
14. Make sure I know the real decision-maker at the very beginning of every sales negotiation.
15. Make my initial sales contact at managing director level.
16. Keep my appearance

smart and businesslike at all times.

17. Never make derogatory remarks about my company or its employees in order to avoid personal responsibility for mistakes, even when it isn't my fault.

18. Ask for the order as soon and as often as is appropriate.

19. Never directly belittle the products of my competitors.

20. Listen and talk in accordance with nature's ratio of two ears to one mouth.

Happy New Year!

TRADER

PRODUCT NOTES

No data formatting restrictions

A FIBRE optic link for data communications that is claimed to require no expertise in optical design, calibration or adjustment by the user has been introduced on to the UK market by Hewlett-Packard.

Designated HPR-0010, the link has no data formatting restrictions and it will operate at any speed up to 10 Mbits per second.

The link comprises a transmitter module, receiver module and a single fibre connector cable assembly. The latter comes in five different lengths to span a maximum distance of 100 metres and full technical details are provided.

The transmitter and receiver modules are compact units and can be mounted directly on to miniature printed circuit boards. Both modules operate from single five volt supplies and all the electrical interface signals are TTL compatible. A system bit error rate figure of one in 10⁹ at maximum data flow is quoted by H-P.

A link monitor is built into the receiver module to warn the user when the information flow is interrupted. Another system refinement is automatic levelling. This frees the user from having to continually adjust transmitter signal level.

The transmitter module for the HPR-0010 system is an integrated electrical-to-optical transducer and features bipolar integrated circuits and a Gallium Arsenide Phosphide light emitting diode to convert TTL level inputs to optical pulses at data rates up to 10 Mbits per second.

An integral optical connector on the module allows easy interfacing without problems of fibre-detector alignment.

The HPR-0010 costs £401.28 from any HP franchised dealer.

Hewlett-Packard Ltd (CW), 15th Street Lane, Wetherby, West Yorkshire, LS15 7AR. Tel. 0734 781774.

Puzzle answer

2936
28774
8831

Computer Manager

(Planning and Quality)

Starting Salary Up to £10,000 p.a. plus company car.
W. Yorks.

Applications are invited for this key senior management position in the Computer Services function of Grattan, a leading independent mail order company with a total staff of 5,000.

The Job — to manage and lead a qualified specialist staff in:
(1) Recommending the most effective way in which computers and associated equipment can contribute to company objectives up to 6 years ahead, reviewed annually.
(2) Providing the interface between senior user managements and Computer Services to ensure that Operational and Development needs are met.

The position reports to the Management Services Manager, has immediate colleagues in the Computer Managers—Systems/Programming and Operations, and has 6 Systems Controllers as direct subordinates.

The Person — You will ideally have acquired specialist computer and line management experience in large commercial organization(s) and be successfully performing at a senior management level. You may be a Director of a software house or have senior consultancy experience. You will certainly understand the importance of cost justification in computing, have a knowledge of current computer technology and a keen awareness of business planning and systems. Essentially you will possess the intellect and personal attributes to manage this specialist function in a fast-changing business environment.

The Installation — ICL 2980, IBM 370/138 and a developing network of DEC PDP 11s. Main applications presently are order processing and agents accounting.

How to apply — Dial the operator and ask for Freephone 5092, and when connected David McKechnie, Management Services Manager, OR write, enclosing brief career details to:

Howard Whiteley,
Group Personnel Services,
Grattan Warehouses Ltd.,
Anchor House, Ingleby Road,
BRADFORD BD9 2XG.

Grattan

This position is open to both men and women.

Computer Manager

The Organisation:

The Department:

The Job:

The Engineering Industry Training Board has the responsibility for setting and maintaining standards in the Engineering Industry.

The Computer department consists of 36 staff working on general commercial systems on an IN-HOUSE ICL 1902, running under George 2S with ICL 2500 series terminal equipment.

The work covers the Programming and Operational aspects of the Board and includes:

- maintenance of existing systems,
- planning and implementing new batch and interactive systems,
- implementation of an IDMS Database system,
- planning for future requirements,
- applicants should have relevant management experience and should also have experience of System-Level Programming and Computer Operations,
- a knowledge of ICL Hardware and Software would be a distinct advantage.

The Rewards:

Salary £8,000 plus, depending on experience etc.
● Long term Yearly rise 1.130 per annum, ● 23 days paid holiday per annum ● Pleasant working environment ● Free Car Parking ● Relocation expenses may also be available.

Your Action:

Telephone Mr G. R. Oldfield on Watford 44322. Extension 31 for an informal chat and further details, or write for an application form to: Mr E. T. G. Shuldham, Senior Personnel Officer, Engineering Industry Training Board, 41 Clarendon Road, Watford, Hertfordshire, WD1 1HS.

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WE PRODUCE systems using minicomputers and microprocessors to enable Railway Signal control of trains through some of the busiest junctions in the world.

THIS NEEDS co-operation between programmers and engineers from the laboratory through the factory and into the signal box.

WE WANT Programmers at all seniority levels to work on developments and projects. An engineering background is valuable but not essential.

YOU WILL have the satisfaction of seeing a job through from initial design to working on site.

CONTACT Mr. C. A. Porter, GEC General Signal Limited, Elstree Way, Borehamwood, Herts. Telephone 01-953 8211 extn 3521, or complete the FREEPOST coupon.

THE FOLLOWING is a page from an advertisement for GEC General Signal Limited. It is a coupon for requesting a brochure or application form.

I have experience over: 2 years 1 year 0 years 1 longer

My present salary is in the range: £4,000-£5,000 £5,000-£6,000 £6,000-£7,000 £7,000-£8,000 £8,000-£9,000 £9,000-£10,000 £10,000-£11,000 £11,000-£12,000 £12,000-£13,000 £13,000-£14,000 £14,000-£15,000 £15,000-£16,000 £16,000-£17,000 £17,000-£18,000 £18,000-£19,000 £19,000-£20,000 £20,000-£21,000 £21,000-£22,000 £22,000-£23,000 £23,000-£24,000 £24,000-£25,000 £25,000-£26,000 £26,000-£27,000 £27,000-£28,000 £28,000-£29,000 £29,000-£30,000 £30,000-£31,000 £31,000-£32,000 £32,000-£33,000 £33,000-£34,000 £34,000-£35,000 £35,000-£36,000 £36,000-£37,000 £37,000-£38,000 £38,000-£39,000 £39,000-£40,000 £40,000-£41,000 £41,000-£42,000 £42,000-£43,000 £43,000-£44,000 £44,000-£45,000 £45,000-£46,000 £46,000-£47,000 £47,000-£48,000 £48,000-£49,000 £49,000-£50,000 £50,000-£51,000 £51,000-£52,000 £52,000-£53,000 £53,000-£54,000 £54,000-£55,000 £55,000-£56,000 £56,000-£57,000 £57,000-£58,000 £58,000-£59,000 £59,000-£60,000 £60,000-£61,000 £61,000-£62,000 £62,000-£63,000 £63,000-£64,000 £64,000-£65,000 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